CHEMICAL MARKETS

THE BUSINESS MAGAZINE OF CHEMICAL INDUSTRIES

VOLUME XXXI AUGUST, 1932 NUMBER 2

Contents for August, 1932

CAN WE CREATE CHEMICAL SALES?.....*By Theodore Swann*.....115

MAGNESIUM ECONOMICS.....*By John A. Gann*.....117

BALLYHOO AND RESEARCH.....*By Benjamin T. Brooks*.....119

"SHIFTING SANDS".....*By H. E. Armstrong*.....121

SOLVENTS FROM ESPARTO GRASS..*By James MacGregor*.....127

CHEMICAL DEVELOPMENT—PAST AND FUTURE REVIEWED *By Salmon W. Wilder*.....129

THE CHEMICAL MARKETS OF ASIA.....*By Charles E. Mullin*.....131

PLATINUM ALLOYS FIND NEW USES IN CHEMICAL PROCESS INDUSTRIES.....*By Edmund R. Thews*.....134

A RESUME OF WASTES.....*By J. Wrench*.....137

DYESTUFF ECONOMICS—MAKING, NAMING, PRICING, SELLING..*By J. Blair*.....139

CHEMICAL MARKETS *is indexed regularly in the* INDUSTRIAL ARTS INDEX

Regular Departments

Editorials	111
News	145
Finance	153
Markets	163
Prices	164
Index to Advertising	190

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VOL. XXXI AUGUST, 1932 NO. 2.

Public Servants and Pensioners

EVERY public servant, that is, every elected officer and appointed employee, and every public pensioner, that is, every person who receives any pension, bonus, or insurance paid from public funds, should be by law deprived of the right to vote.

ONCE let the justice, the simplicity, and the sanity of this preventative proposal reach the mass of our taxpayers and we will shear of their political power the bureaucrats and the privateers, and make the way clear for such a saving in governmental expenses that will make our recent painful and paltry budget paring seem the poor joke it really is.

ORGANIZED demands for bonus and farm relief; the individual loans, featured in Mr. Garner's relief bill; the inability of Congress to cut the Federal pay-roll proportionately to the reductions made by industry; the failure of the sales tax, and the piling of higher and higher rates on large personal incomes and business profits—these are all plain signs that our Republic has been infected with a disease that has often proved fatal to the great democracies of the past. The people having the power to do so, milk the public treasury for their personal advantage. Their representatives, who should be custodians of the resources of the whole country, have neither the foresight nor the courage to resist the temptation to pander to popular favor.

THE first steps down this flowery path to national ruin are easily and logically taken—pensions to veterans, public works to create work, needed relief in cases of real distress, and taxes paid by those best able to bear the burden. Already, these have an ominously familiar sound, and once started on this road, the pace quickens and the strides lengthen. In the twilight of Rome, a legionnaire was never dropped from the public payroll, and even citizenship papers were a lifelong "meal ticket" with passes to the best gladiatorial shows and the fashionable Christian-baiting festivals.

WE ARE still a long way from those last stages of democratic decay; but the symptoms of the disease are evident enough. Organized minorities, blocks, and treasury raids indicate the first ravages of the political disease.

There is no cure.

But there is a very simple prophylactic that is a sure preventative.

Log-rolling must be stopped and a high premium placed on largesse from the public treasury. To be effective, it must be strong medicine that will kill these germs.

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ORGANIC CHEMICALS

Organic Chemicals Department

E. I. DU PONT DE NEMOURS & COMPANY, INCORPORATED, WILMINGTON, DELAWARE

Normal Prices As the basic importance of the financial aspects of our economic crisis is more generally appreciated, there is increasing discussion of the purchasing power of gold. We hear more and more about normal prices, and with greater frequency are asked to entertain proposals to raise prices to the level of 1928. That the inflation of gold price that year has intolerably increased the world's total burden of debts is perfectly obvious, and the strain may well have passed the safety point to our present monetary system; but it is well to keep in mind in all such speculations, a couple of pertinent facts.

In 1920 the level of all prices rose to a point higher by a third than the peak following the Napoleonic wars. During 1921 there was a sharp drop in the universal price level, which declined slightly but steadily till 1929 and since then precipitously, till now it is very slightly above the 1913 point. We want to indicate that very obviously the years from 1914 to 1932 cannot be considered normal. If the years 1903-13 are to be regarded as representative, our present price level is normal, and any attempt artificially to peg prices to a pre-depression point will merely postpone the evil day of final readjustment. Without such artificial restoration it is plain that there will be no quick, considerable rise in prices even upon the resumption of more nearly normal activity in world markets.

All Signs Fail Whether it is due to the optimism engendered by the rise in stocks, or the higher prices for hogs, or the joyful reaction to the adjournment of Congress or the nomination of Governor Roosevelt instead of Governor Ritchie or Newton Baker, or perhaps the various official recuperative measures, or the final clean-up of our shelves and cupboards with a real demand for replacement—whatever the reason, business in the past month has shown definite improvement. Almost without exception chemical companies report better sales in July than June.

Whether the present improvement is the start or another false start towards better conditions remains to be seen, but these are the facts. Increased tonnage in July over June is not normal. Market reporters have written of the "customary summer dullness" year in and year out. Better demand at this time of the year is doubly encouraging. Further, within thirty days, we will be close to the autumn months when business, good or bad, invariably speeds up. This may give enough momentum to the present favorable turn to sustain business for two or three months, when the sentiment in the country, combined with the constructive measures now in operation, aided by the thousands of orders for goods that must soon be replaced, will considerably hasten ultimate recovery.

Good Work Well Done Trade associations of various sorts are not held in so high esteem in such times when many of their activities seem abortive, and when their costs to the industries are reckoned rigidly. Moral support of their efforts sinks and their membership shrinks. Doubtless, our present disinterest in these organizations is overdone; but it is partly due to that overzealous enthusiasm that conceives them to be a sort of easy panacea for all industrial evils. As a corrective to both these exaggerations, it is pleasant to note, especially, a contribution recently made by the Sodium Silicate Manufacturers' Institute. They have taken the subject of concrete curing with silicate of soda—which represents a good and growing market for their product—and have exhausted its practical aspects in a beautifully printed booklet. Herein will be found the facts and theories; the carefully recorded results of many tests; tables of time, volume, and temperatures; specifications, formulas, and complete details of all the approved methods. To anyone using concrete, the book is invaluable, and we commend it as a working model of what might wisely be done for many important uses of most of our industrial chemicals.

How Much Wage Cut? The American Industrial Pay-roll—executive, office, and plant has been cut 16.7%, and the details revealed by a recent survey of the National Industrial Conference Board are extremely illuminating, both of the attitude of our industrial leaders towards labor, and in forming an impartial scale against which can be measured not only the salary and wage reductions of the individual chemical company, but also the hullabaloo that is raised in Congress, in state legislatures, and in municipal councils over any suggestion to reduce governmental expenses by pay-roll cuts.

Out of a total of 1,718 concerns, 80.5% have reduced executive salaries; 81.0% have reduced other salaries; and 75.4% have reduced wage rates. Comparatively few wage or sal-

ary reductions took place in 1930, but the number increased rapidly in 1931 and early in 1932. Salary reductions generally preceded reductions in wages.

The simple average of reduction for executives was 20.3%, but the average, weighted according to the number of persons affected in each company was 14.9%. For other salaries, the decline is reported as 15.9% unweighted and 13.1% weighted; for wages, 13.9% and 11.1%. The fact that the weighted average is lower, simply indicates that less reductions were made by the larger companies.

Most unemployment figures are open to question because they are usually tinged with political bias. The 1,718 companies included in this non-political survey employed 3,258,666 persons in 1929, and 2,391,009 persons in 1932, a decline of 26.6%. This means that more than one person in every four workers is now without employment.

It is pertinent to note that the decline registered in the executive group is the most severe. Industry in this depression has intelligently sought the cooperation of labor in meeting a distressing condition in contrast to the arbitrary attitude generally taken in former periods when wage adjustments became vitally necessary. The leaders have joined shoulder to shoulder with labor in a determined effort to drag the wheels of industry out of the mire.

Nitrogen Pros and Cons The international nitrogen cartel, which died a year ago because of irreconcilable differences between the synthetic producers and Cosach, has been resurrected. A year of supposedly unrestrained competition has shown the two factions that no matter how they may regard each other, their mutual salvation lies in toleration.

It is not surprising that the synthetic producers were able to iron out their differences. The little plants in the smaller countries have been clamoring for larger tonnages, but this condition was subject to judicious trading. Natural nitrate presented a much more difficult problem. The extremely unsettled financial and political situation in Chile made it seem quite likely that the politicians would be adamant against any cartel that would prevent "dumping" nitrate in a desperate effort to raise ready cash. Apparently, responsibility has sobered the radical ideas of some of Davila's group.

It is difficult to share all of Mr. Garvan's fears that the resurrected cartel imperils this country. We are not now large exporters of nitrogenous material. Our market, or the best part of it, is in this country. The legal machinery is now available to give domestic nitrogen producers sufficient protection against any determined effort by the cartel to employ the United States as a dumping ground for surplus stocks. The howl of the farmer and his representative in Congress is always loud; but figures cannot be denied, and the American public will not countenance the destruction of the nitrogen fixation industry in this country. The import figures are illuminating. Sulfate importations rose from 32,143 tons in the first four months of 1931 to 88,448 tons in the same period this year. Every other nitrogenous material has shown a decline—that in sodium nitrate, from 301,433 tons to 44,270 tons, being the most marked. It is rather unlikely that the cartel managers will openly wage war on domestic producers in this country. Any stabilized price condition internationally would seem to be a help, rather than a hurt, and in the meantime our own nitrogen producers are lying low, selling as little as possible at present prices. In fact, some of the sulfate producers are practically out of the market and storing material against what they evidently expect will be a better sales situation in the near future.

Quotation Marks

No price-stabilization measure, no equalization fee, no debenture plan, can lead to anything but further difficulty unless it carries with it a workable plan for controlling crop output.—*Horace Bowker.*

Lost morale is worse than a lost job.

In the judgment of the executives of a large majority of reporting companies, research as a major tool of business management is growing in importance and usefulness compared with the other tools at their command.—*National Research Council.*

Fifteen Years Ago

(From our issues of August 1917)

Rumors link the names of National Carbon, Union Carbide, and Air Reduction in a new $150,000,000 company.

Curtis Bay Chemical (U. S. I. subsidiary) is expected to close down as a result of the development of a new fermentation process for the manufacture of acetone.

Potash shortage becomes acute with domestic production estimated at only 20,000 tons against an estimated requirement of 250,000 tons.

It is reported that Thomas A. Edison is turning out 3,000,000 pounds of carbolic acid monthly at his New Jersey plant.

Market report on fertilizers states "practically every material is scarce and unobtainable by some producers of mixed goods."

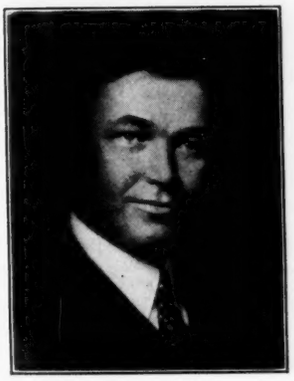
Can We Create Chemical Sales?

By Theodore Swann

President Swann Corporation

THERE is a theory that in a market for such industrial raw materials as chemicals, the demand is not only constant, but it is also fixed by factors beyond the control of the producers of these products.

We—and I mean the whole chemical industry—cannot sell any more trisodium phosphate, for example, than will be used for certain specific and known purposes. We—meaning a particular chemical organization—will only "get our share of the market," and if we go out to increase our sales, we shall only be taking away business from competitors without having increased that market a single pound.



What's behind the energetic extension of the Swann sales organization? Here is the answer from the man whose vision sees a new era in chemical marketing.

This is a persuasive theory. It sounds likely. But it is a dangerous half-truth. It involves the temptation of unsound price cutting. It tends to stimulate in some salesmen a low-grade spirit of competition. It is an idea which—be it as theory or as practice—I would like to see wiped out. Dr. Edwin Slosson wrote a famous book, "Creative Chemistry;" someone ought to write another entitled "Creative Chemical Sales."

There are certain definite handicaps in having started a business career as a salesman and later having become a manufacturer; but it is a background with its compensations. The good lessons that practical selling experience teaches are: first, that you don't get business sitting on a deep leather chair in the hotel lobby, and second, that orders have the most cheerful and unexpected way of bobbing up during calls when you least expect them. It is because I learned these two lessons thoroughly when I was young that I am now unwilling to accept this well worn theory about fixed chemical demand.

Working on our quite contrary conviction, we have instituted a wide search for markets for Swann products. We started out in Ohio, almost a year ago, and were rather unpleasantly shocked to turn up seven hundred and fifty-six plants to which we had never tried even to sell, which were normally consuming some sixteen million dollars worth of chemicals annually. In one territory, where one of our subsidiaries has been operating for fifty-five years, the regular salesmen, following the methods of our investigators, went out and uncovered two million, five hundred thousand dollars in potential business within three weeks.

In nine months, we have nearly doubled the number of our product-accounts. During that period twelve and one half per cent of our total business has come from these new customers. And we are steadily adding to our product-accounts every month.

On the basis of the facts we have discovered—not on mere guesswork or hopes—we have increased our sales force by more than fifty per cent. And we have opened additional sales offices in five cities. We have also established resident salesmen in ten additional cities.

These facts have been broadcast and to many in the chemical field have the familiar ring of the old sales effort. But this is only a part of the story. What we are working upon is different in several respects from the ancient tug o'war for orders. In the first place, we are trying conscientiously to build up some first-hand data on just what and where the chemical markets are: in other words, who uses how much of what chemicals and where. But we are also learning why they use these chemicals. Definite knowledge of the American market for chemicals of all kinds is curiously lacking. For our own use, we want to know these facts. If half the changes take place in the country's sales and distribution systems which have been forecast, there will be a veritable revolution in the chemical business during the coming ten years. With the facts of the market, we believe we can judge better what course to sail.

In another, a more important, way our intensive and aggressive selling is even more constructive. It is fitting in with our research work. Here is where our knowing "why" and "how much" chemicals are used comes in.

We have spent more money on research than we have paid out in dividends. In the last year we have produced many new organic chemicals. New uses for these newly developed products, as well as new applications for old products, are constantly being brought to light by our market studies. To mention but one of these new uses, which means a broadening market for one of our products and an important saving to users, we found that garages were using gasoline to clean automobile parts and chassis. One of our products does this work. The product and the use would never have come together but for personal contact of our investigators and garage men.

From this illustration you will gather that neither the purpose nor the net result of our market work is to take business away from others. In that case it would not be worth doing, for any gains that we might make could be easily taken away from us by similar tactics on the part of our competitors. We are deliberately seeking to discover new ways of increasing the total use of chemicals.

It is constructive selling to supply a man with something new and better to fill an old need. An incident will illustrate the idea. A certain plant used large quantities of a chemical which was supplied in a sticky, gooey mass. Observation of the use of this material in the plant and talks with the buyer developed that it could be more easily handled and used if it could be supplied at about the consistency of brown sugar, so that it could be shoveled. Our chemists worked out a means of making it that way. That kind of selling has a quality of permanency.

It seems to us a good time to prepare for the return of prosperity, and like all chemical people, we are sincerely convinced that chemicals and chemical products will have a bigger part than ever in business when it revives again. But the revival will be based upon a new foundation, and we are trying to anticipate what we think will be the new uses of chemicals and the new ways of chemical selling.

Tartaric Acid Production in the U. S.

Domestic production of tartaric acid and cream of tartar is from imported argols, wine lees, and calcium tartrate. In 1929, the last census year for which data are available, tartaric acid was produced domestically by two establishments in New York, one in California, and one in Ohio; and cream of tartar by two in Massachusetts, two in New York, and one each in California, New Jersey, and Ohio. Their output is recorded as follows:

United States production of tartaric acid and cream of tartar[1]

	Tartaric acid		*Cream of tartar*	
Year	*Pounds*	*Value*	*Pounds*	*Value*
1923	5,868,000	$1,544,431	5,971,186	$1,746,363
1925	5,498,920	1,541,955	7,072,651	1,472,082
1927	5,781,166	1,810,890	7,594,777	1,746,793
1929	4,906,479	2,059,680	7,852,559	1,930,577

[1]Bureau of the Census.

The Industry's Bookshelf

The Elements of Chemistry, by William Foster, 653 p., published by D. Van Nostrand Co., N. Y. City. $3.00.

Written for the beginner in college chemistry with the definite purpose of giving to the student a broad view of the fundamentals and the many applications of the science. This edition has been carefully revised and includes many suggestions and criticisms received from professors who have used the book for classroom work for years. Contains valuable exercises at the end of each chapter, also additional suggested readings and references.

International Unemployment, by M. L. Fledderus, 496 p., published by The International Industrial Relations Institute, N. Y. City. $2.50.

The book contains numerous analyses of unemployment fluctuations in various countries they were made in preparation for the 1931 Social Economic Congress. The studies give a vivid picture of the recurrence of unemployment in the past two decades and were initiated first, to give a starting point to the discussions and second, in the hope that they might lead to further investigations into the basic reasons bringing about conditions such as the present state of widespread unemployment and suffering in practically every country in the world.

Principles of Money and Banking, by Russell Donald Kilborne, 591 p., published by McGraw-Hill, N. Y. City. $4.00.

The third edition of this valuable contribution to the fundamental knowledge of the principles underlying the financial structure of business and banking is noteworthy because of momentous happenings of the past three years. These are carefully analyzed. One or two new chapters have been added and practically all chapters revised. A new chapter on the historical development of banking in the U. S. is particularly instructive. The book is written in a style which makes for easy reading without sacrificing completeness.

Modern Methods in Quantitative Chemical Analysis, by A. D. Mitchell and A. M. Ward, 178 p., published by Longmans-Green & Co., N. Y. City. $1.75.

The book is designed to supplement the standard works on quantitative analysis by stressing the newer methods and procedures introduced in the past 10 years. In addition, considerable space is devoted to the so-called "rare" metals in order to break down the tendency to consider these unimportant. In the past few years the status of these metals has changed materially.

A Short Course in Qualitative Analysis, by F. E. Brown, 332 p., published by The Century Co., N. Y. City. $2.25.

One of the volumes in The Century Chemistry Series of which James Kendall, F. R. S., Professor of Chemistry at the University of Edinburgh, is general editor. Purpose of the book is to develop ability to make elementary analyses, to give appreciation of reports of analyses by experts, to fix general principles of chemistry by using them in chemical processes, to add to the knowledge of chemistry, especially the chemistry of electrolytes, and to prepare for more advanced courses in chemistry.

The book is divided into three parts: Theory, Preliminary Experiments, and Procedures. The procedures are much more detailed than in most similar texts. The preliminary experiments are so arranged that they show the necessity of the procedures and precautions. Throughout the book an effort has been made to keep a vivid reasonable picture of the chemical processes before the mind of the student. In place of classical expressions which experience indicates are not readily understood, more picturesque illustrations or familiar similes have been used.

Gamble's International Naval Stores Year Book for 1931-1932-1933. 102p., published by Thomas Gamble, Savannah, Ga. $3.00.

At a time when the oldest chemical industry of the country is passing through one of its most severe tests this annual review of the naval stores industry assumes an even more important place on the desk of every executive connected with that industry. As usual the book is complete and authoritative in data pertinent to the rosin and turpentine field.

Magnesium Economics

Lower Prices and Newer Uses

By John A. Gann

Dow Chemical Company

ONE outstanding effect of the growth of the magnesium industry in this country has been the rapid decrease in the cost of the metal. In 1915 ingot magnesium sold for $5.00 and more per pound. Seventeen years of effort have cut this cost to 30 cents per pound or 1-17 of the former value. At this figure the sales price of magnesium compares favorably with that of other metals of time-honored usage. It is now able to compete successfully in Europe against the German product. The consumption of domestic magnesium increased as the cost decreased, but showed several irregularities due to economic conditions. The peak in 1918 was due to war contracts. The slump from 1919 to 1922 was caused by the general industrial depression. The lower consumption in 1930 and 1931 as compared to the 1929 peak is somewhat misleading. Most of the curtailment was in the use of magnesium as a scavenger and constituent in other alloys, whereas the consumption of magnesium castings and fabricated articles remained substantially constant.

Abundance of the Raw Material

One of the first inquiries of the industrialist interested in the extended use of a given commodity is directed toward the availability of necessary raw materials and how this effects the possibility of large scale production. Seventy-five per cent of the earth's crust is composed of non-metallic elements, and 25 per cent of metallic elements. This 25 per cent is divided into six per cent heavy metals and 19 per cent light metals, the individual metals being present in the amounts indicated. A better understanding of the availability of magnesium is obtained when we confine our attention to those metals having properties that fit them for structural use. We then discover that magnesium is the third most abundant of our engineering metals, being surpassed in quantity only by aluminum and iron.

Magnesium is not only a large constituent of the earth's crust, but also occurs as compounds that find direct use in industry or that are readily converted into other useful compounds. Magnesium chloride constitutes approximately 34 per cent of the mineral carnallite, is an important constituent of many salt brines, and is present to the extent of approximately 0.4 per cent in ocean water. Extensive as these resources are, the production of metallic magnesium is not limited thereto. Large deposits of brucite and magnesite are found in various countries. Dolomite, a mineral containing magnesium carbonate and calcium carbonate, is still more abundant. Huge quantities occur in easily-quarried beds in many parts of our country. Processes have been developed and successfully operated in which the magnesium oxide and magnesium carbonate content of these minerals is converted into anhydrous magnesium chloride suitable for the electrolytic production of the metal. The supply of raw materials for the manufacture of magnesium is, therefore, inexhaustible.

We will not stop to discuss all of the magnesium compounds and their uses, but in passing, wish to call attention to the application of magnesium chloride and magnesium sulfate in the production of plastic cements. When magnesium oxide is mixed with strong aqueous solutions of these salts, inter-reactions occur with the formation of oxy-chlorides and oxy-sulfates, respectively, that have the property of setting like cement. These synthetic cements form the basis of stuccoes, flooring, synthetic wood, and sound-absorbing materials.

Five Commercial Uses

The metal magnesium is used commercially in five distinct fields. Pyrotechnics created the first demand and are primarily responsible for starting our United States industry. For years the layman was acquainted with this metal only in the form of flashlight powder, and to him the terms "flashlight powder" and "magnesium" became practically synonymous expressions.

The memory of the dazzling white light of the photographers flash has contributed to the prejudice regarding the combustibility of this metal. The most certain proof of this error is furnished by the daily use of magnesium alloys in motor parts and other common applications.

The Grignard reaction employing magnesium is used in the synthesis of a wide variety of organic chemicals. This offers a valuable means for preparing certain complex medicinal perfumery compounds. The importance of magnesium as a deoxidizer and scavenger is well known in the metallurgical world, especially in the nickel and nickel alloy industry. Additions of approximately 0.1 per cent magnesium make these metals sufficiently malleable to permit fabrication by mechanical working operations. Its efficiency depends largely on the strong electropositive character of the metal and its enormous affinity for oxygen at high temperatures.

Magnesium is an essential constituent of many alloy systems, particularly those of aluminum and zinc. It is used in amounts ranging from ¼ to 2 per cent in most of the high strength aluminum alloys, both cast and wrought, especially in those alloys whose properties are improved by heat treatment. It is a small but very important ingredient in zinc die casting alloys. Approximately 0.1 per cent exerts a pronounced beneficial influence on their stability, particularly in hot humid atmospheres

Tomorrow's Uses

The four uses mentioned thus far have been responsible for most of the magnesium consumption to date. While they have been real factors in the establishment of our domestic industry, the important developments of today and tomorrow lie in the utilization of the ultra-light magnesium alloys as structural metals. The outstanding characteristic of magnesium is its extreme lightness, a quality that distinguishes it from all other engineering metals. Beryllium is almost as light as magnesium, but at the present time cannot be classed as an engineering material. Magnesium is two-thirds the weight of aluminum, one-fourth the weight of zinc or cast iron, and one-fifth the weight of copper or nickel. Such lightness, coupled with good strength in a single metal, is one of the demands of the transportation engineer and of the user of portable and hand operated equipment. Pure magnesium does not meet these property specifications and the development of valuable high strength magnesium alloys constitutes one of the worthwhile contributions of modern metallurgy. The romance of alloy development is as interesting as that of the production of the pure metal, but perhaps more technical, since it deals so largely with numerical values. In some instances the tensile strength and hardness have been approximately doubled and the yield point increased six-fold over the corresponding values for the pure metal. All of these alloys are characterized by their high ratio of fatigue endurance to weight. Special alloys have been developed for specific purposes. Some have high thermal properties, others resistance towards salt water, while all are free from inter-crystalline corrosion.

Methods for casting, heat treatment and mechanically working these alloys have advanced to the point where these operations are now conducted on a commercial scale. Sand, permanent mold, and die castings are readily obtained. The alloys are fabricated to practically all standard sizes of rods, angles, and shapes. Ease of machining is a big asset in the finishing of articles. Final assembling is done by riveting and spot to gas welding.

"Growing Pains"

Now that magnesium has become a commercially important metal and bids fair to develop into a large industry, it is a matter of interest to look back over the early stages of its manufacture and use. The struggles, failures, and disappointments connected with the first work on development of a manufacturing process may seem of small moment when looking at them from the vantage point of our present knowledge. At the time, however, they were real and marked the various stages of growth, from early infancy through the period of learning to creep and, finally, to the point where the infant industry is able to stand on its own feet.

It is impossible to predict accurately what the future has in store, but we can call attention to a few signs of the times. The wide adoption of magnesium in our industrial life depends on four conditions:

1. Ready availability of sufficient raw material.
2. Development of efficient manufacturing processes yielding a low cost metal.
3. Developing of methods of casting, working and treating the metal.
4. Development of alloys of proven dependability.

Nature has abundantly looked after the first point, while man has worked valiantly to fulfill his part of the contract. The result is a new world-wide interest in magnesium. Many industrialists are intensive in their investigations as to how they can most advantageously use this ultra-light metal. Others are becoming actively engaged in the production of magnesium alloy parts and articles. New and extended activities are reported from Italy, Switzerland, France, England and Russia. Such facts prove an awakening conviction regarding the importance of this metal. The infant is well able to stand on its own feet—time only will tell what strides it will take.

Ballyhoo and Research

By Benjamin T. Brooks

P. T. BARNUM was a good showman; if the "wild man" did not actually come from Borneo, at least he was a good wild man, and in this sense Barnum was also an *honest* showman—and he made a lot of money. The figure of Barnum naturally comes to mind when one thinks of the way research has often been sold in recent years. In the oil industry, drilling in untested territory is called "wild catting," and everyone knows the general hazard. Promise flowing wells to prospective investors and the Federal authorities will send you to keep company with Dr. Cook. But research wild catters and mystery process promoters seem harder to catch.

There are various types of research ballyhoo. There is the plain, honest promoter who used to sell mining stock but who now promotes a company having a secret process of hardening lead, or cracking petroleum; there is the company, listed on the Curb, or among the "unlisted securities" that has developed a mysterious guava jelly that will refine gasoline, and the tip is that "the Standard Oil Company" is interested,—better buy the stock now. Of course, the world has always had fakers and swindlers, but in recent years, chemical faking has been a fairly good racket, helped and largely made possible by the ballyhoo of the more respectable research propagandists.

The fakers and swindlers are naturally not members of our strictly ethical learned societies. But a man may be very high church and still be an optimist. Robust optimism is necessary in research. University trustees have been known to seek professors who, modestly in the Sunday supplements, foretell driving ocean liners to Europe by the power furnished by the disintegration of a thimbleful of some sort of matter. Henry L. Doherty once protested this sort of optimism and stated, "I have been told at least a hundred times that science will surely find a substitute for petroleum. I am sorry to say that some of the men who have said this have been classed by the world as *scientists*." Not long ago, the daily papers, reporting a convention of chemists, quoted at length from the address of an optimist who proposed that all the farm waste be mixed with sewage to furnish power and light for our cities and carbon dioxide ice for the refrigeration. It requires the background of venerated academic associations, and a certain solemnity, to get away with such a good one, but one wonders what might have happened had Aimee McPherson chosen to follow chemistry.

Overzealous optimism is an innocent cloak to hide behind when a million or so has been lost by ill advised research. And, we repeat, optimism is absolutely necessary. Whether the error is crime or just foolishness rests upon a very simple thing, intent, or intellectual *honesty*. We cannot psycho-analyze all the optimists, but we suggest that most of the research ballyhoo optimists suffer from inhibitions concerned with lack of money.

Probably the chief cause of research ballyhoo is a mistaken idea of how best to raise money for research. Research is scientific exploration, and like geographical exploration is an assault of the unknown, full of hazard for all concerned. Research may also be regarded as the one kind of speculation which is essential to technical progress. Much more money has been given for purely scientific research in the United States than for industrial research. It is safe to say that had it been attempted to finance the Andrews expedition into Mongolia by talking about gold deposits that might be found, we never would have heard of dinosaur eggs. Probably not a single one of our great telescopes would ever have been built had it been attempted to "sell" the idea of their utility or possible profit to the donor. Our finest university laboratories were not built to study anti-knock motor fuels or methods of laundering, but were

given by their donors to study germanium, or the theory of catalysis, or new pyridine.

Honesty of purpose, according to the immortal Burke, should be as easily discerned as its opposite. Evident honesty has certainly been one of the greatest assets of our most successful and best known institute of industrial research. The public has come to regard research as the search for truth and it comes as a shock and disillusion to learn that research is not always associated with twenty-four carat honesty. That discovery we owe to ballyhoo.

PAINT PROTECTION

Just what measure of protection paint offords iron and steel has been exhaustively studied in England by Britton and Evans, and the following is a summary of their findings.

Wrought iron and copper steel, properly painted, appear to give better service than ordinary steel, owing to the more adherent character of the rust (as previously found by other workers). Electrolytic iron develops rust more slowly than steel at first, but after 2½ years there is little to choose. A single coat of red lead, in the Cambridge atmosphere, gives almost complete protection to good steel, for a period long enough to produce perforation of the specimen (0.32 mm. thick) where it is unpainted.

Salt, moisture, or old rust shut in below a paint coat cause it to fall prematurely. Mill-scale varies greatly with its behaviour. A typical scale may seem to help an unsatisfactory paint to protect from frontal attack, but below a good paint (which by itself should prevent frontal attack) scale aids the undermining type of attack, and is particularly unfavorable on its effect when the time for repainting arrives. A scale broken locally is far more objectionable than a complete scale, and in such cases rapid peeling of paint and scale together often occurs. The removal of scale by pickling is being examined; the exposure of "faultily pickled" specimens has up to date given no support for the criticisms sometimes made against pickling.

Metallic zinc paints can give some protection even at an uncoated gap in the coat under atmospheric exposure, while red lead gives some protection at a scratch-line under immersed conditions. The amount of oil and thinner does not greatly affect the value of red lead paints, provided the paint is not so thin as to produce "clear channels;" iron oxide paints become steadily less protective as they become thinner. The effective life of the paint decreases with the drier content if it is applied in dry weather, but increases with the drier content if painting is done in wet weather. A series of steel specimens carrying sprayed coats of metallic aluminum has been started at four stations (representing urban, marine, country, and mixed atmospheres), and up to date the results are encouraging.

We Congratulate

Ralph E. Dorland, August 22, 1879
Charles S Wehrly, August 26, 189)
Arthur A. Backhaus, August 30, 1889

Ralph Dorland is a direct descendant of a sturdy, old Dutchman, Gerretse van Dorlandt, who settled on Staten Island, 1668, A. D. For three years, he taught pharmacy. He took golf lessons for a season from Isadora Duncan. With such a past, it is not difficult to understand why he is one of the two most popular chemical sales managers in the Metropolitan area. He is famous for his four sons; for his annual Terpsichorean feats at Christmas-time; for winning kickers' handicaps; for never having had his picture in the Saturday Evening Post; and for having brought the Dow sales in the East from an allegorical three drums to an alleged 3,000,000 cars. So, here's to "Doc"—good fellow and good salesman!

Rutgers and Columbia gave early training to Charles S. Wehrly, manager of the chemical department of Henry W. Peabody for the past seven years. With a hankering to go places and see things "Charlie" decided that "East of the Suez" would provide more thrills than college so he set out to see the world but never got further east than London where he entered the employ of Alex. H. Pickering in 1919, three years later becoming vice-president. A member of the American Chamber of Commerce in London with a chemical training he was chosen advisory chemist on the Reparations Commission assisting Dr. Charles H. Herty. Returning in 1925 he connected with the chemical department of Henry W. Peabody where his ability and knowledge of foreign conditions landed him on top. He is an authority on mercury markets, bridge and roses. He successfully handles the largest pipe smoked in the industry.

In 1917 when Milton Whitaker forsook teaching to become vice-president of the U. S. Industrial Alcohol, he made one of his assistants, director of research of the company, and the initial development of the chemical products of the ethyl group was not a little due to Arthur Backhaus' labors. In 1924, he was put in charge of the great plant at Curtis Bay, Maryland. Last year, he was brought to fill an administrative executive post at the home office in New York City. We congratulate him on the good work he has done and the rewards he has won. His best friends say he has but one hobby—alcohol—from the point of view of production.

"Shifting Sands"

By Professor H. E. Armstrong, F. R. S.

Silicon, spinach, and the Sphinx; the International Mind, the British Navy, geology, tariffs, and Captain Cook, are among the ingredients Dr. Armstrong cleverly mixes in this wholly enjoyable bit of good summer reading for the tired chemical industrialist. He raps the schoolmasters, whom he hates, and the chemists whose methods and ideals he sharply questions. He commends Nicholas Murray Butler and he censors Sir Harry McGowan. Abstracting this paper (originally an address before the Institute of Chemists) has been a difficult but delightful task. You will find it "easy reading."

SILICON and carbon form the frame work of the world. Our crusted globe is said to have in its sedimentary layer perhaps 60 per cent of *silica*, the substance of *sand*, which you may remember the Walrus supposed "no seven maids, with seven mops, sweeping it for half a year," could clear even from the shore along which he and the historic Carpenter were walking on their way to their Colchester feast. I say "historic Carpenter," because he is the man to whom Huxley alludes, in his lecture *On a Piece of Chalk* (Collected Essays, Vol. VIII), in saying:—

> I weigh my words well when I assert, that the man who should know the true history of the bit of chalk which every carpenter carries about in his breeches-pocket, though ignorant of all other history, is likely, if he will think his knowledge out to its ultimate results, to have a truer and therefore a better conception of this wonderful universe and of man's relation to it than the most learned student who is deep-read in the records of humanity and ignorant of those of Nature.

This passage will surely some day rank as "inspired." Has any one of you made the least attempt to live up to Chalk? How many have wondered at its beauty—at the history stored up in its perfected whiteness? Huxley's advice, given in 1868, remains disregarded by the schools up to the present day: probably, there are few in which this essay is read.

Chemists once worshipped sand in the bath. It has honorably scarred the Sphinx: sand-blasting, in fact, is an age-long natural industry. Strange to say, sand no longer keeps company with lime: mortar seems to be of the past. Watching building operations, you rarely witness the miracle of a heap of lime, within a circle of sand, made to smoke by throwing water over it; instead, you see dirty gray stuff tipped out, maybe from a paper bag, upon a heap of sand, the two with due deliberation mixed together and made into a sludge with water. One of the most useful lessons in chemistry, one that could be given in public almost everywhere, is now all but lost to us.

We are told that the police have difficulty today in detecting criminals, because they are not allowed to put personal questions to suspected persons. So it is in chemistry; as we walk abroad, suspicions are no longer aroused as they were. When lime is seen, when wetted, to grow hot and smoke, it is pretty clear that it is something else than limestone—a clue is given; if thoughtfully followed up, this easily leads to the discovery of the nature of the crime wrought upon chalk when it is burnt. Unfortunately, Edgar Wallace allowed the motif to escape from his pen—what criminal purpose might he not have put into it. Cement seems to be soulless: all it can do when it is wetted is to subside back into stone without a squeak of any kind. No one thinks of connecting up the slaking of lime with the setting of cement, yet maybe in the two operations there is much of a muchness. Roll this poser up in paper, some of you: smoke it as a cigarette.

Silica—sand—is begotten of Silicon. The change from one to the other word is small in spelling, yet infinite in meaning. An opportunity, this, to reflect how much more wonderful are words even than chemistry. The art men have developed of expressing themselves is beyond the miraculous. Chemists, I am afraid, are yet far from mindful of the art: they have an astounding way of misusing words and of being misled by them, simply because they are rarely trained to think out their meaning. To be exact in word is to go far towards exactness generally. Philology is the best introduction into chemistry. I say

this from personal experience. The reflection leads me to call your attention to a paragraph in Sir A. Quiller Couch's *Fifty Years* article in *The Times*:

Good Writing

Something solid I do retain of my recollection: that we were all in those early nineties fiercely intent on "good writing" as certain schools of painters from time to time have been intent on "good painting." I am no praiser of past times: my business, indeed, has come to consist mainly in understanding my juniors. One thing, however, I shall maintain—that we took trouble with our language. And another thing I shall yet maintain—that to strip the personal out of a poem or a story, to write it down economically and present it objectively, so that it tells itself, is the real gymnastic of any writer's art.

Silicon is younger brother, next of kin, to carbon in the family of elements—but how different. Biting into oxygen, the one is lifted to the skies, the other becomes the dust at our feet. Our crops feed upon the one product; cereals are held upright by the other: it is doubtful if Silica have any vital function other than that of stiffening stalks, unless it be in some degree concerned in the laying down of starch in the grain.

In the crystal state, silica takes rank as a Regal Gem and as a Rotarian in the Polariscope, which seems likely to last longer than Royalty. In the disperse phase, by a series of chain reactions beyond the thermodynamic gyrations even of the Oxford school—in the vulgar tongue, as sand—Sven Hedin has shown us, it has over-whelmed kingdoms and great stretches of land, especially in the East, are made barren by it; yet in these it is piled into forms of beauty as is no other material. As a carpet it is the golfer's paradise but in banks it is bad for ships.

Bricks Without Straw

You will realize that in thus speaking of the dispersity of sand, I am doing my best to placate colloid susceptibilities—that I even seek to recognize the lilt in the stilted jargon of the clan. Let me add there is no peroxide snag in silica. Bricks are now made without straw but few without silica.

In perfection of feel, sand comes next to living flesh, though it can scarce be grasped. It flows almost as a liquid and so may be used in the hour glass and in hyperbole—we speak of the running-out of the sands of time.

It is a substance that has been washed about the world from the beginning of the seas—from the days when water began to fall upon the primitive rocks and erode them. Then the granites fell to pieces and their crystalline contents were sorted out and distributed as two separate sediments—clay and sand, a part going into solution. The clay itself was but silica with certain frills upon it, frills which could be more or less easily torn away—of alumina, of iron, of lime, magnesia, soda, potash and so on.

When carbon began its reign and took on the wings of life, certainly not in the sea, the solutions would have been too dilute, selective influences were brought into play. When life came into the seas, silica and lime were taken out of solution and used as skeletal or protective materials. Two classes of organisms came into existence, typified by the *Radiolaria* and the *Globerigerina*. These lived at the surface; at death, they decayed and their remains sank to the ocean floor, eventually forming limestone. Here brute crystalline force and surface attraction came into play: owing to the great area exposed, the minute organisms were dissolved and their substance deposited upon the larger surface of spicules from sponges: flints and chert were the consequence and the limestone became purified. Thus it came that the three types of stratified sedimentary rock were laid down that are found the world over—sandstones, claystones and limestones. Everything else seems to have been intrusive. Here and there the triplicate sedimentary succession has been disturbed by the intrusion of heated matter from below the sedimentary layer: in this way, heavier elements have been lifted from obscurity, often in isolated localities. As these rocks have undergone subaerial decay, heavy metals have entered into solution, to be deposited here, there, and everywhere in mineral veins. Nothing has remained steady. Under the influence of pressure and heat, the materials in the deep seated rocks have been rearranged in equilibria, determined by the conditions in which they have been placed. Gradually, the metamorphic changes are being deciphered and interpreted by the petrographers, and some day we shall have a fascinating picture of silica chemistry—worshipped thus far only in the undefined, money-clad, dull form of silica gel, though admired in opal and agate. Chemists have far too long delayed their attack on this field. Geology is an almost unknown subject in the schools. The petrographic microscope is handled only by the very few, yet it is a most fascinating instrument, of wonderful resolving power.

Sermons generally are out of favor today; the most neglected are those in stones. Few realize the full force of Wordsworth's words:

> To the *solid* ground
> Of *Nature* trusts the mind that builds for aye.

Chemists need some spur to carry them beyond titrations, to carry them beyond intangible paper abstractions and to see the good in everything, so that they may advisedly turn to the books in the running brooks and in truth listen to the tongues in trees. Our neglect of agriculture and of true mineral chemistry is nothing short of a disgrace to our profession: we have no sense of the service we are most called upon to render to society; we are no longer learning sufficiently how to use our hands and, as to our wits, they are not even wool-gathering.

Let it ask for real knowledge of the world and its materials, a high degree of preparative skill, some power of using books of reference; above all, the

ability to carry out an exact mineral analysis, perhaps also an organic combustion. The rest should be done by us seniors: by the provision of text-books, both safe and sufficient.

At an early date, we have to refashion our scheme of instruction, casting out all unessential details, so that the majesty and meaning of the framework of our science may be fully revealed. The holy fire of enthusiasm which formerly burnt fiercely upon our altar now but smoulders under the rubbish piled upon it by academic triflers. We have to cast out the money-changers—to have a clear conception of our duty and of the greatness of our mission.

What is the chemist anyway? Having command of the organic element, he is *facile princeps* the anthropologist. He alone can survey the world's resources with full understanding. He more than anyone can see how dangerously near our social system is to being foundered upon a quicksand. Overhanging the future, he sees the alarming spectral light of Phosphorus moving most dangerously towards extinction—the writing upon the clouds: *Ohne Phosphor gar kein Leben!*

Privileged Chemists

Clearly he is the most privileged person upon this earth, if he will only have it so. No one else can so fathom the inner mysteries of the cosmos and of life. These are fast being unfolded before us, as co-ordinated operations of a multitude of simple chemical factors. Let them say what they say—those who are seeking the occult! We have sufficient occupation in reality and need be in no hurry to regard our account as closed. We know little enough of sand but far less of ourselves—what we are and ought to be. Only the few are worthy to be chemists: the majority probably cannot and never will be able to think chemically, however valuable they may be as artificers. Chemistry is one of the fine arts—no inelastic, mathematical discipline. It is also probably the most difficult of all the sciences: because it is the most fundamental and comprehensive and because there is so much art in it. To be chemists, we must be everything; above all, alive to our essential ignorance of most things and the limitations under which, therefore, we must carry on our work.

The neophysicists at the moment are to the fore, but that is mainly for commercial reasons, because of wireless and the money in electricity. They are dangerous on two grounds—because they are mathematicians and because of their narrow mentality and great electronic conceit. It seems to be impossible for a physicist to be a chemist—mathematics forbids; probably it will be left to the chemist to teach the old necessary physics he once did. The mathematician takes things for granted and the rest follows. The chemist should not take anything for granted: he may opine and seek to prove but never proclaim assent until he knows. This is why so much physical chemistry is outside chemistry.

The chemist should seek to reckon himself a whole chemist and nothing short of one; to be able to take generally into account the properties of all the compounds of all the elements and to visualize many things which elude description. From this point of view, chemistry and physics are one science. Specialists are properly spoken of contemptuously as experts—no one can be so dangerous as the specialist. The state of our society gives living proof of this today. Experts are everywhere, but there is no connecting tissue of general intelligence: their work lies outside that of the ordinary world and is its great danger.

Compulsory Brain Work

The world is in the unhappy position we now deplore—simply because we have not learned to think together; because we have allowed certain experts to go too fast ahead: nothing is done methodically. We are making no conscious effort to develop the full understanding of our affairs. Man is necessarily eminently selfish: the art of thinking for others has to be imposed upon him. Looked at from this point of view, our educational system is simply dishonest. The system we have built up is one calculated to promote selfishness and to give employment to a maximum number of people, all bent, through their inability to think, upon interfering with the natural process of learning—all bent on using their ignorance in misleading learners. What has elementary education (since 1870) meant for the most part? A vast expenditure upon buildings designed by persons called architects, who have no conception what education means; a still larger expenditure upon bureaucratic red-tape administration of the funds; an almost complete failure to consider the nature of the task and of the qualifications required in the teacher. Men of words have ruled the roost and have asked only for words. In no other field has there been so perfect a display of the inability of ignorance to recognize its ignorance.

You of the present generation can have no conception of the social change during the past 70 years, the period I can overlook. At the beginning of the period, affairs were in the hands of people of innate ability, who grew up through personal effort under minimum interference from outside, especially from science. Today, our main effort is to cultivate inability and to work through inability: suddenly, through war, we have discovered this cannot be done. Carlyle had already proclaimed this doctrine when I began my career. You will find it all in *Sartor Resartus* and the *Lectures on Heroes*; in Ruskin also: so-called Science put the Victorian prophets aside. Science is now beginning to see that it must strive to bring them back or itself go under, far more quickly than it has

risen into notoriety. We have too long worshipped the American god and American vulgarity: until we get rid of their pictures and have cleansed the world of the baneful influence these exert, there will be no health anywhere. We have equally to redeem our own press and make it of avail as an instrument of culture. We must get back our moral sense. The rest will follow.

As I write this, I receive from Dr. Nicholas Murray Butler, President of Columbia University, New York, an address on *The International Mind*, which he recently delivered before the Institute of Arts and Sciences of his University. In the opening paragraph he tells his hearers: "If there is anything which this world of ours needs more than another just now, it is, first, wider horizons and second, deeper and more accurate thinking."

Thinkers Barred

There is no thinking, no thinking in common, of any kind, let alone accurate thinking; if our thinking were accurate, it could not need to be more so. Our one great difficulty is to recognize our ignorance—that we cannot think with any approach to accuracy, if we think at all. None of us can face the terrible complexity of the problems the wide world presents today. Yet, as President Murray Butler contends, the nations are inextricably intermixed and interdependent. How can there be an International Mind? The opportunities of forming one are almost nil: the press is not open to thinkers, mainly to wasters.

There is not even a chemical mind in this country. If we saw our way to bring one about and did, we might then go further and seek for some wider international agreement. We can and must train ourselves for this wider work within our own body.

Whether I go to a meeting of the Council of the Chemical Society or to one of the other Committees I waste time upon, the story is the same: blank inability to look facts in the face and little desire to work together. Only in the city, away from science, do I find the wish on Committees to work together—to honest ends without consideration of self; any willingness to accept guidance from those who presumably know best. Their lights may be low and indeed are—but city men act up to their lights. Do we who pretend to be scientific?

Our lights seem to me to be rushlights compared with the city wax candles. If we could mate the two, the product might well be a stupendous search-light of irresistible penetrating power.

President Murray Butler can see the need of an International Mind, the need of accurate thinking—but makes no suggestion how this is to be brought about. He is not a teacher, neither is he an industrialist; he is a brilliant talker. If he understood the times, he would abolish credits from his University and seek to encourage the art of learning. No art of thinking is taught anywhere today. We need nothing short of an educational Paul, but a Paul without sophistry: one who will lead the nations to learn to think and to recognize how few of us can: therefore, to learn, if possible, to know who may be safe leaders and to trust only these. We have had sufficient evidence of unsafe, unscientific leadership in these past few days; of men coming together to do common work, yet revolting immediately an acquired doctrinal prejudice is threatened: because of their unscientific outlook, in other words, their innate inability to use available knowledge. No statesman today can deal with the problems of our time rationally who is not conversant with the history of industrial development and the coincident agricultural decadence of Europe and America.

Few realize the extent to which farming is going out, as the result of mechanical spoliation of great areas; in Canada, Australia and South America, Empire Free Trade may be very desirable, but we must count the cost to our farmers; we cannot grow wheat against Canada and Australia. Australia has only the advantage of space; she has little soil worth speaking of and must, as a rule, pay in fertilizers for what she gains. Canada, however, is drawing upon a great natural fund of fertility—the question she must soon ask herself is to what extent she is justified in allowing over-production and exhaustion of her soil at the expense of future generations.

Raw Materials

The argument applies to all raw materials. Our own supplies are nearly exhausted. Everywhere, we have to curb the spirit of industrial competition: if we are not to play Old Harry with the World's resources. This is all the more necessary now that we know that the African continent is mostly exhausted land. New countries are only new to us: all have been grazed from time immemorial. Only the old and cultivated lands are fertile. Already, through ignorance, man has ruined large stretches of South Africa, probably beyond recovery even through afforestation. We must all force ourselves to think and to think together.

Nowhere more than in Agriculture is there need of the Man! There has been no agricultural chemist since Liebig; no scientific leadership in agriculture since Liebig and Lawes, no properly considered plan of action. What has been done is mere pottering compared with what has to be done. Only physical science seems to be organized—but then, it is so much easier than organic.

I hope you are reading the *Fifty Years* articles in *The Times*. Nothing illustrates the advance made, particularly in engineering industry, so clearly as does that of our Navy—a Navy that has led the world, how entirely you may learn from Mahan. I have seen it all happen, as I can recall the old wooden sail-

ing ships and the first of our ironclads, *The Warrior*, built in 1860. I saw *The Warrior* at Gibraltar in 1865, astern of the *Marlborough*, a great wooden three-decker. During these 65 years, the social world has been recreated. Breech-loading cannon were only coming into existence; gun-powder was still in use but in big chunks for big guns. I remember Sir Frederick Abel's demonstrations to the Chemical Society of the force of gun cotton, in its earliest days. I was in the great cordite case, soon after the introduction of smokeless powder. I have seen everything happen in electricity from the laying of the first successful Atlantic cable by the Great Eastern, the premature precursor of the modern Atlantic liner.

You boys have no idea what all this has meant—most of you take everything for granted. The last thing you do is to think how it has all been brought about and the consequences.

Ignorant Teachers

I do hate the schoolmasters taken collectively; individually many of them are delightful. They are alike in all countries—mere bookmen. The schools must be made practical, in the sense that they must meet the needs of the world. Oxford is our bane; Cambridge runs but a neck short of her. Though devoted to words, corporately blind worshippers of the classics, neither knows the meaning of the word *Scientific*: neither has yet learned that the world of today is a new world, in virtue of the introduction of the experimental method: neither can translate the word experiment into practice. The schools have not yet learned to construe the term and to teach its application: being untrained, as they are, by their universities, teachers can only *give demonstrations* or call on their pupils at times to *verify the statements* made to them. They have no conscious understanding of the way in which the doctrine they preach has been established. As a body, the Science Masters in our schools are sterile—if they had the mentality to experiment and any power of thinking for themselves, they could not fail to do much original work: the urge upon them would be irresistible, as it is in all upon whom a scientific afflatus has once descended.

Lord Fisher made the Naval Schools suit the needs of the Navy. He made the Engineers—Gentlemen and the Gentlemen of the Quarterdeck—Engineers: a magnificent double qualification. We need in like manner to make our schools suit general needs. To this end, we must depose Oxford from all control over education—it can only be reformed out of its present existence. Then let us give all the Headmasters five years notice to quit: meanwhile, raise up a set of men to take their place, able to work on Fisher lines. We need to train them to be the equivalent of the engineer on the great ironclad—practical men, able to work the school ship.

To quote Admiral Wemyss:—

> The gradual substitution of mechanical power for manual labor was productive of somewhat unlooked-for results. Formerly work involving the use of power had been carried out by parties of men under the supervision of officers or petty officers, who thus had frequent opportunities of exercising some of those qualities of leadership so necessary to efficiency and to the maintenance of discipline. Now that is all changed. Such work is frequently performed by single individuals, manipulating a lever or a valve. These methods afford but little opportunity for the exercise of initiative or judgment and have largely tended to change the independent-minded "Jack Tar" of old into the somewhat automatic artilleryman of today.

Here we have a concise picture of the effect of mechanization. Instead of noting the disability under which we labor and seeking to counteract the influence of machinery—and democracy—the schools but intensify it, by worshipping at the shrine of the examination fiend.

At a time when we are most in need of leaders we are doing our utmost to nullify the upgrowth of leadership. This is but what has happened in industry through rationalization and the formation of big combines.

Let us get back to our unholy selves. When are we chemists to set an example and cease from being a disunited rabble, lolling upon sandbanks of insecurity, carrying various sub-species labels, as if we were horticulturists' varieties, dibbled out to attract unwary buyers? We should stand as a great forest, giving stability to the land wherever we grow. The call is for the *man* everywhere—he is not to be found, at least among chemists. The call is heard in all countries. Nowhere is it better voiced than in Lowell's lines:—

> More men! More Man! It's there we fail:
> Weak plans grow weaker yet by lengthenin';
> What use in addin' to the tail
> When it's the head's in need o' strengthenin'?

We are over-crowding our higher schools and universities with weaklings and ruining all by forcing them to compete for place. No one is allowed the leisure to grow up to his scientific stature. Scarcely any have developed hands. The little-enders are perpetually examining and holding back those who might perchance be big-enders. If there be potential Faradays, they are killed out in the process. We have to devise a system, as effective as that which has revolutionized the navy, which will make gentlemen chemists and chemists, gentlemen. The navy selects its material—so must the university. All will first be obliged to take the general "Arts" course and gradually add to their qualification by attending special courses of instruction at arranged intervals.

When chemists are thus trained, they will recognize the need of working harmoniously together, instead of splitting up into inarticulate back-patting coteries. Meanwhile, we have to wave our flag of chemistry for all it is worth. I am persuaded that few have formed

any conception of the social value of our science. Medical men have had the wisdom to organize in one body. We must follow this example.

About a hundred and fifty years ago, we had a great sailor, who discovered Australia—one Captain Cook. Opinions will differ as to the value of the discovery. It is certainly a great Continent, full of charm and interest, as I can testify, having been one of its circumnavigators. Australians think it "God's own country"—but they are not chemists. As a chemist, in a strictly Pickwickian sense, I have my doubts. Walrus and Carpenter, if they were to explore it, would not weep merely "like anything" to see the quantities of sand—they would weep waterfalls, the more when the Carpenter, mindful of the piece of chalk in his pocket, would find that he had to go far to meet its equivalent—and that phosphorus was not in the picture. No country is likely, in the not distant future, to have more need of chemists who are chemists than Australia: to shift its sands to useful ends.

Captain Cook Discovers

To go back to Captain Cook. However great the value of his geographical discovery, he made a far greater discovery by, as the history books put it, conquering scurvy—the degrading disease of ill-fed humanity, the world over, affecting the poor especially.

About 50 years ago, the present Sir Thomas Barlow pointed out that the disease was coming to be a perquisite of the rich, affecting the infants of the well-to-do whose mothers failed to feed them—being no longer under the eye of Queen Victoria and probably ill-fed themselves, perhaps as a consequence of the incoming of the Savoy habit, as a substitute for the underdone Roast Beef of Old England. Like Captain Cook, Physician Barlow resorted to greens and milk and advocated "rawness" in everything. Being fond of children, perhaps he had in mind the verse in the Baker's Tale:—

> He remarked to me then, said the mildest of men,
> If your Snark be a Snark, that is right,
> Fetch it home by all means—you may serve it with greens.

At last the chemist could no longer resist being dared to do something and took up the challenge—but only recently in earnest. Everyone will know how, in the last few weeks, at least three and probably four advitants have been described as definite substances. We have yet to be sure that the descriptions are all correct. The story of the antiscorbutic agent is in some ways the most significant, though it is not yet complete.

Captain Cook's trump card the lemon, the orange, the tomato, the potato and even cabbage, we are assured, contain the alkaloid narcotine. Apparently, it is only present in the unripe lemon and orange, the amount diminishing as ripening proceeds: the ripe fruit contains instead the antiscorbutic agent. This is thought to be methyl-nornarcotine, as this derivative of the alkaloid is a powerful antiscorbutic. Whether or no this prove to be the case, the hunt is started. Vegetable food of all kinds has to be studied with reference to degree of growth and seasonal and climatic conditions, to determine when it is worth eating. Maybe, Mr. Runciman is only justified in shutting out foreign vegetable produce at certain seasons. At what stage of unripeness is it safe or desirable to import oranges? When may apples and plums be picked? Is English grown winter lettuce worth eating? Is that raised, say in the Paris area, any better? Must it not come from some region with more sun? The hunt must not be restricted to merely one advitant. Vegetables carry salts and we know not what other things of importance. An illimitable field of necessary action is here spread out for the chemist to cultivate. He has suddenly been made prime guardian of public growth and health. No Chancellor will be able to put us aside when this is our acknowledged mission.

It will be the chemists' office also to protect the public against the mass of misleading, often false, advertisements in the press and elsewhere: to make clear the way in which the modern advertising agent is too often the enemy of society.

Lastly, we have to guard the gates against an arrogant industrialism that would not serve us with greens but with snythetic substitutes.

On more than one occasion of late, Sir Harry McGowan has talked in public of synthetic food in the future—the dream of a Berthelot, in my early days. Against this we have to set our faces with undying hostility. By nature, through long enjoyment of the fruits of the soil, directly or with the aid of the herbiverous animal, man's life is bound up with that of the plant—if we desert it, we are doomed to die. Little enough of Nature is left to us: at least, let us remain natural feeders. Sir Harry McGowan may well remain satisfied to rob only nitrogen from the air, in the cause of industry and in support of the plant. Even in this he may well find himself beaten by the plant.

> To the solid ground
> Of Nature trusts the mind that builds for aye!

Technical Committee D on Stoddard Solvent of the A. S. T. M. reports results of additional work carried on at the U. S. Bureau of Standards and elsewhere and that further service tests are to be carried on in dry cleaners' naphtha corresponding to the following specifications:

Flash point		not below 100° F.
Distillation	10 per cent point	330° F., maximum
	90 per cent point	375° F., maximum
	end point	410° F., maximum

At the meeting of Committee D-11 on rubber products Doctor Harlan A. Depew of American Zinc Oxide Co. was chosen as chairman for the next two-year period. Doctor Depew who is well known in the rubber industry as an outstanding rubber technologist has been very active in the A. S. T. M. and has long served Committee D-11 as chairman of its Subcommittee on Abrasion Testing.

Solvents from Esparto Grass

By James MacGregor

Like kelp and corncobs, esparto grass has long tempted the chemical investigator as a likely raw material, and of late years it has come into real industrial use as a source of cellulose. Its by-products, therefore, become of commercial interest, and this description (abstracted from "The Chemical Age") is by a capital authority, the managing director of George Scott and Son, Ltd. It is of more than timely interest, for today no new development in the solvents field can escape attention.

OF THE vast quantity of esparto used today—and the greater part of it in Scotland—about 45 per cent is obtained as pulp. Apart from the waste heat derived from the incineration of the organic matter removed in digestion, and the wax which is recovered on a small scale by one of our most enterprising mills, no value whatever is derived from the balance. A perusal of the patent and technical literature bearing on the subject indicates, however, the vast study which has been devoted to the problem of obtaining useful products from the organic matter present in the black liquor.

From the year 1865, in which Routledge was granted a patent for "the recovery of organic substances from the spent or used liquors resulting from the preparation of fibrous substances in the manufacture of paper stock," until the present, many patents have been taken out, but no known process, other than that evolved by Dr. E. L. Rinman—with which this article is concerned—holds any prospect of commercial success.

Dr. Rinman's earlier process consisted in mixing the concentrated black liquor with determined proportions of caustic soda and lime and subjecting the resultant mixture to dry distillation. It is not proposed here to deal with the involved chemical reactions which take place. It should, however, be noted that the proportions of caustic soda and lime employed were determined on a scientific basis. This process resulted in very gratifying yields of chemical products, but the chemical engineering difficulties attached to this process lay in the fact that the mixture was a dense plastic mass which could not readily be reduced to a dry state. At the Regensburg mill, in Bavaria, this viscous mass was placed in shallow trays, stacked on racks and carbonized in stationary retorts, similar in construction to those employed on wood distillation plants.

Under Dr. Rinman's most recent patents the use of additional caustic soda is abandoned, and a mixture of barium and calcium oxides employed. When the mixture of these chemicals in a fine state of division is brought into contact with the hot concentrated black liquor a vigorous chemical reaction ensues, resulting in the elimination of the bulk of the water present and the production of a dry powder. This discovery overcame the difficulty attached to the handling of the caustic soda-lime mixture. It also resulted in yields of chemical products never previously attained.

At the same time the use of barium introduced new problems. Carbonization of the mixture of concentrated black liquor, caustic soda and lime, resulted in a hard soda coke. At Regensburg, in the first instance, this soda coke was burned off in a rotary kiln, but this was not entirely successful. Later it was burned on a chain-grate stoker attached to a water-tube boiler, but the grate area proved inadequate and it was largely burned off in heaps on the floor, as recovered ash is today burned off in many esparto mills. The burned residue was leached, the liquor sent to the causticizing plant and the carbonate of lime to the lime kiln.

The argument may be advanced that paper makers are not chemical manufacturers, but mills engaged in the manufacture of paper from esparto grass are concerned with chemical processes of an involved nature, with which they have been familiar for many years. There is, therefore, no ground for contending that the carbonization of the black liquor and the production of clean caustic liquor under this process would introduce problems more serious than are attached to the present methods of incineration and causticization. While in the case of the first plant installed it would be necessary to provide both carbonization and rectification plants on that site, it is not proposed to attach a rectification plant to each unit. The by-product

plant comprises two sections, carbonization and rectification. At each mill a carbonization plant would be erected, and from that plant a crude concentrate, approximately 50 per cent, would be delivered to a central rectification plant.

The economies of the process demand that the practically soda-free carbonates be revivified for re-use. That this is feasible and that the revivified chemicals are capable of being re-used in the process without impairing the yields of chemical products, has been fully demonstrated. The practically soda-free wet carbonates mixed with a certain percentage of carbon release the bulk of the admixed water readily. The mixture is calcined at a high temperature in a revolving kiln of the type used on cement plants. The burning of barium carbonate to barium oxide in a revolving kiln in the absence of other bodies has not been achieved, but the presence of calcium carbonate in the process under consideration renders this possible. The water is evaporated and the free carbon is burned out in the back end of the kiln, the decomposition of the carbonates to oxides being achieved in the hot zone at the front end.

Experimental Plants

In designing the pilot plant, the desirability of doing so on lines which would prove practicable in large-scale operation was kept prominently in view, and in order that the results from this pilot plant might be controlled, parallel tests were conducted in a laboratory plant which permitted of no escape of volatiles by reason of the total absence of moving parts. Designs for a unit capable of dealing with the concentrated black liquor from a mill handling 300 tons of esparto per week are complete, embodying the experience acquired on the pilot plant in so far as the essential features are concerned. It is assumed, however, that the esparto mill will deliver the concentrated black liquor containing approximately 45 per cent moisture to the by-product plant.

The fine products which result from rectification and fractionation consist chiefly of acetone, methyl-alcohol, methyl-ethyl-ketone, isopropylalcohol and di-ethyl-ketone, etc. These have all been isolated and their identity established. Methyl-ethyl-ketone will be marketed as Butanon-1. The group of products recovered from the watery solution, comprising isopropylalcohol, secondary butylalcohol, trimethylcarbinol and diethylketone, will be marketed as Butanon-2. The products which are insoluble in water, consisting of higher ketones, alcohols and hydrocarbons, with a boiling point of 50°C. to 120°C., and practically water white, it is proposed to market as Butanon-3. Derived, as these products are, from a by-product which is at the moment entirely wasted, there should be no difficulty in marketing the output at current prices. The market for methyl-ethyl-ketone is for the moment limited. The invaluable properties of this solvent in the lacquer industry and in the manufacture of aeroplane dope are already widely recognized.

The relative yields obtained are:—Acetone 24 per cent; methylalcohol 9 per cent; methyl-ethyl-ketone (Butanon-1) 20 per cent; Butanon-2, 20 per cent; Butanon-3, 25 per cent. The remaining two per cent consists of a very light fraction having a distillation range of 21°C. to 52°C.; this consists of one-third methyl-sulfide and two-thirds hydrocarbons.

Based on a soda recovery of 80 per cent and on a concentrated black liquor derived from a mill using 20 per cent of caustic soda, the yield per 100 tons of esparto dealt with will amount to six tons. On liquor from a mill using 14 per cent, the yield is rather over five tons. The hydrogen gas remaining after the removal of all condensable products, and which in the first instance it is proposed to utilize as fuel, amounts to between 120 and 150 cubic metres per ton of grass.

Location of Chemical Production

A census of chemical and allied industries production in industrial areas by major commodity groups was made in 1929 for the first time by the Department of Commerce. An "industrial area" as established for the census of manufactures is an area having as its nucleus an important manufacturing city and comprising the county in which the city is located, together with any adjoining counties in which there is a great development of manufacturing industry.

The bulk of the volume of chemicals and related products is not made in the larger industrial areas, exceptions being the more highly finished products. For example, 84 per cent of the total production of paints and varnishes was made in 30 industrial areas; New York led with 20 per cent of the total production. Chicago industrial area produced 14 per cent of all paint products made in the country, Cleveland and Philadelphia each 6 per cent, and Detroit 5 per cent.

Seventy-three per cent of all toilet preparations were made in these 30 industrial areas, but there is somewhat lessened concentration in these areas although New York led with 55 per cent of the total United States production of these commodities while Chicago was second with 8 per cent.

Two-thirds of these areas accounted for 68 per cent of the total amount of "patent or proprietary medicines and compounds" made in the United States. The five areas making more than one-half of the total United States production were: New York with 22 per cent, St. Louis, 10; Chicago, 8; Boston, 6; and Philadelphia 5 per cent.

The following figures show the production in the 30 industrial areas of the major groups of chemical products but these are not always complete. It is not always possible to give figures in a given area when the number of producers is small without disclosing individual operations. These figures serve only as an indication, therefore, of area production.

Commodity group	*Production value*	*Per cent of total production*
Paints and varnishes	$484,297,000	84
Chemicals	386,613,000	50
Proprietary medicines and compounds	214,540,000	68
Toilet preparations	146,896,000	73
Fertilizers	48,908,000	22
Druggists preparations	45,395,000	36
Compressed and liquefied gases	24,488,000	34
Glue and gelatin	21,096,000	65
Tanning materials and natural dyestuffs	18,416,000	55
Explosives	2,479,000	4
Essential oils	2,228,000	33
Drug grinding	1,938,000	20
Total	$1,397,294,000	

NEW INDUSTRIAL AMYL COMPOUNDS

AMYL AMINES . . . $C_5H_{11}NH_2$ $(C_5H_{11})_2NH$ $(C_5H_{11})_3N$

To benefit those who are finding these amines valuable as starting points for novel syntheses, we present the following determined physical properties:

	Monoamylamine:	Diamylamine:	Triamylamine:
Formula	$C_5H_{11}NH_2$	$(C_5H_{11})_2NH$	$(C_5H_{11})_3N$
Molecular Weight	87	157	227
Distillation Range	85°C—106°C	180°C—205°C	230°C—260°C
Specific Gravity at 20°C	0.7761	0.7780	0.7937
Vapor Pressure at 26°C	35 mm	9 mm	7 mm
Viscosity at 20°C	0.01018 Poise	0.01264 Poise	0.02421 Poise
Refractive Index	1.4068 – 19°C	1.4262—19°C	1.4374—18°C
Surface Tension at 13°C	24.4 Dynes/cm	24.4 Dynes/cm	24.4 Dynes/cm
Specific Heat at room temperature	0.65 cal/gram	0.54 cal/gram	0.51 cal/gram
Heat of Vaporization	108 cal/gram	83 cal/gram	79 cal/gram
Coefficient of expansion. 20°C—60°C	0.00116	0.00102	0.00091
Flash Points	45°F	124°F	174°F

PARA-TERTIARY AMYL PHENOL

The uses for this interesting compound are continually increasing. It is used in the resin field to produce with aldehydes a highly desirable, light colored resin, soluble in all stages of polymerization in organic solvents and varnish oils. It is valuable as a germicide, since it is seventy-five times stronger than carbolic acid. Some of its derivatives are cellulose nitrate and cellulose acetate plasticizers.

AMYL MERCAPTAN . . . . $C_5H_{11}SH$
DIAMYL SULPHIDE . . . . $(C_5H_{11})_2S$

Amyl Mercaptan in very dilute concentrations sufficiently odorizes natural gas for detection. One-half pound per million cubic feet is noticeable, but for definite results eight-tenths of a pound to one pound per million cubic feet is recommended.

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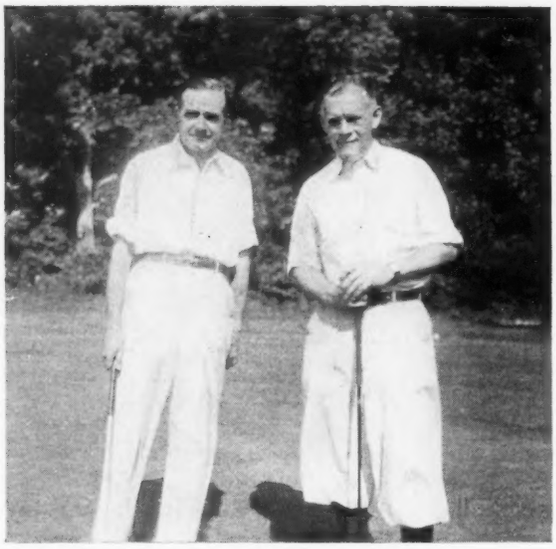
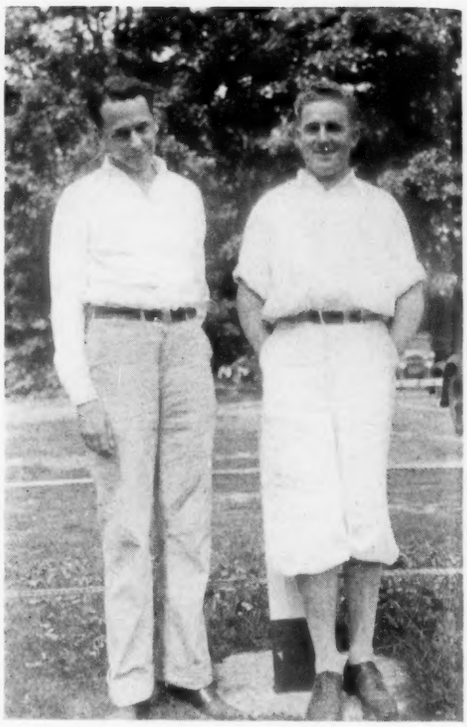
CHEMICAL N

The Photographic Record of



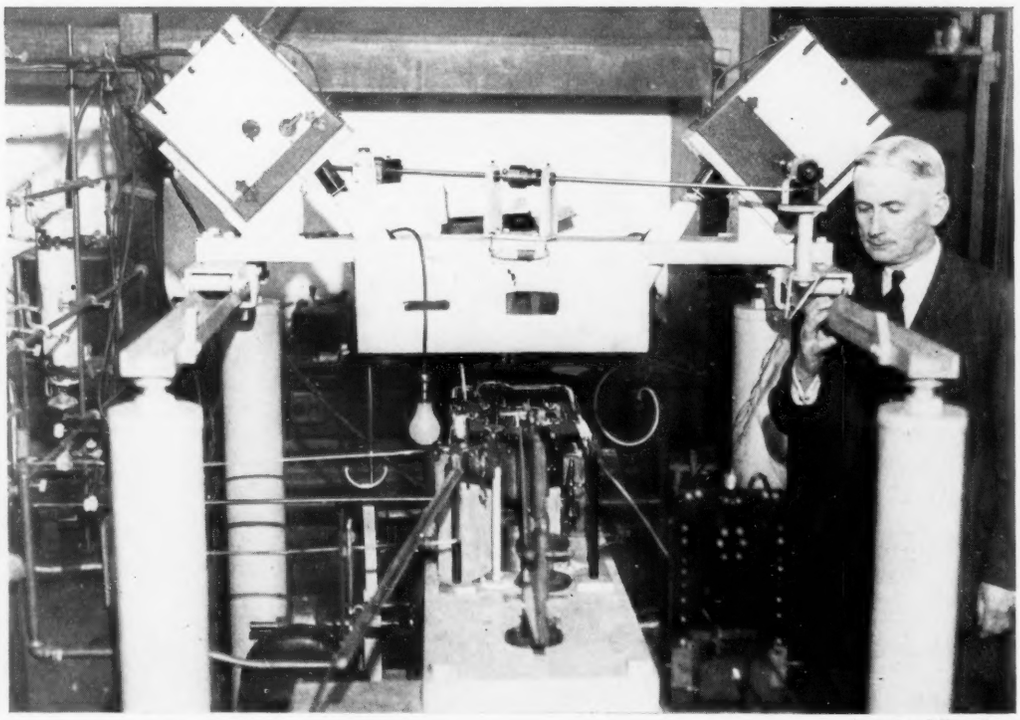
Harry Farleigh, president, Merchants Chemical, and H. Gordon MacKelcan, vice-president, Innis Speiden, paired off at a recent tournament



"Cline" and "Doug"—a pair of Diamond aces. J. C. McKenna, special Diamond Alkali representative in the East and Charles V. Douglas, president, George Chemical, local Diamond distributor

W. K. Wilson, vice-president, and Arthur Phillips, president, National Oil and Supply, hold an informal conference before teeing off

Ralph Dorland, sales manager, Dow Chemical, insists this is an orthodox golf swing



Atoms bouncing about at the speed of two miles per second present a complex problem to the photographer but Professor William D. Harkins of the University of Chicago has finally been able to photograph the tracks left in their wake. His photographs, made with the aid of his camera—machine shown here—have been made after he has obtained atoms of helium and oxygen by bombarding hydrogen atoms with nitrogen atoms. When developed the pictures merely are streaks of light that look like a busy street photographed at night from a tall building

Associated Free Press

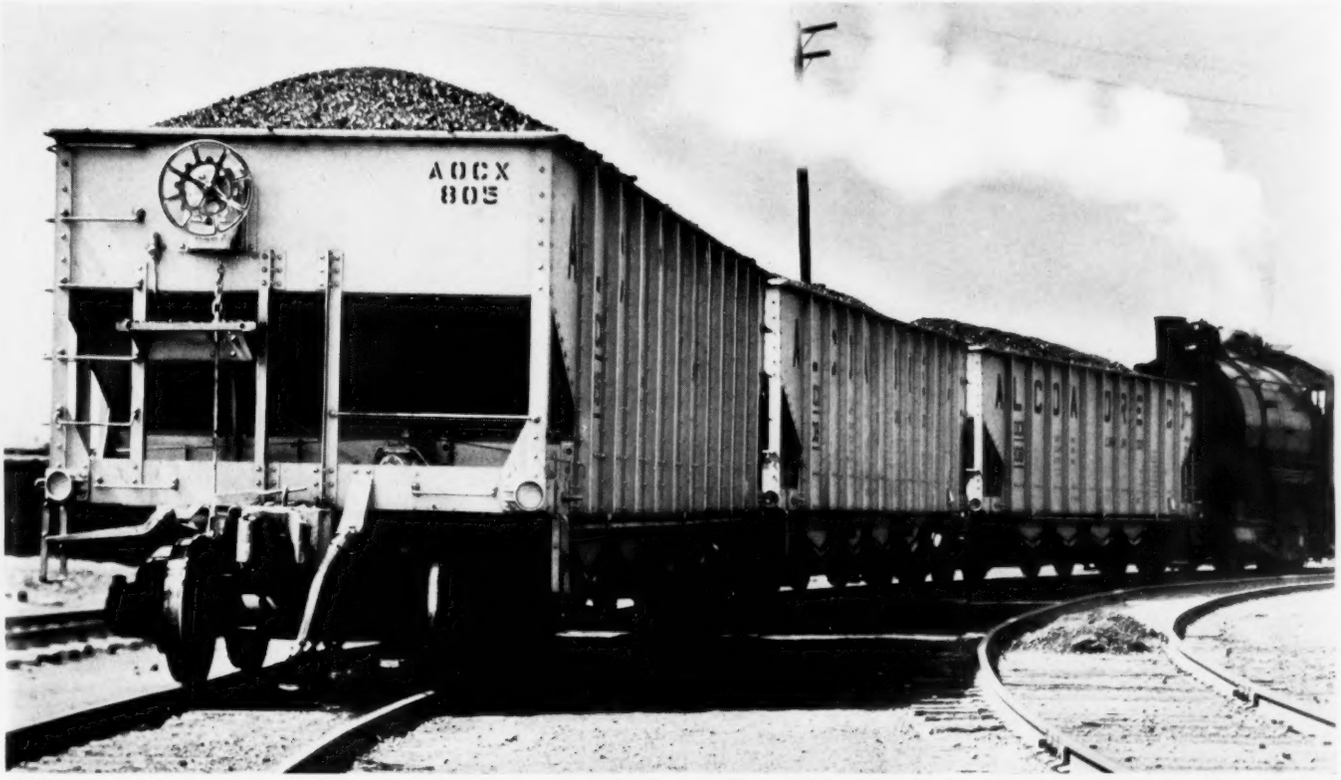
NEWS REEL

of Our Chemical Activities

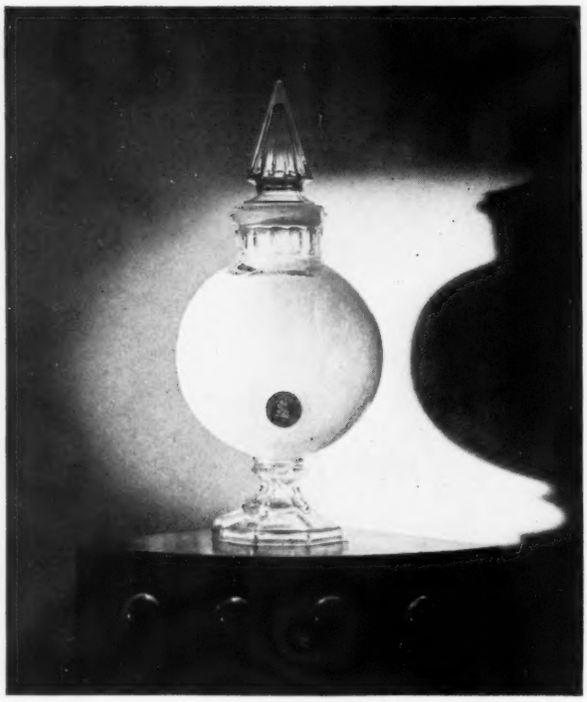
Dr. Charles E. Mullin, who reviews the chemical industry of China in this issue, is shown with his most modern taxi and footman in Harbin during the recent Manchurian trouble

The "Elena"—William B. Bell's (American Cyanamid President) yacht, winner of the last New York to Spain run. Mr. Bell is one of the foremost yachtsmen of the chemical industry and is often at the helm in short cruises

Aluminum comes to the fore in the railroads' battle for lower maintenance and ton-mile costs. Each of these seventy ton Hopper cars, built of light, corrosion-resisting aluminum, saves ten and one-half tons of dead weight



Courtesy Aluminum Company of America, Pittsburgh



Phenol

U. S. P.

Display arranged and photographed by T. Kajiwara, St. Louis

LEADERSHIP is the reward of merit. The ranking position occupied by Monsanto Phenol U. S. P. is the result of outstanding high quality. Its absolute whiteness, purity and uniformity make it eminently satisfactory for all of its various applications.

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Monsanto Chemicals

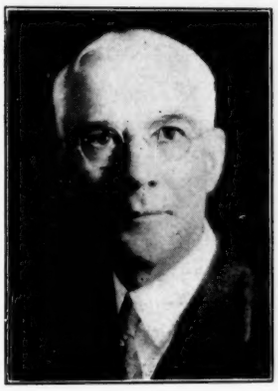
Chemical Development

Past and Future Reviewed

By Salmon W. Wilder

Chairman, Merrimac Chemical Co.

Among the members of the very first class in chemical engineering ever graduated—"M. I. T. 1891"—was a man destined to become a leading figure among the country's chemical industrialists. After forty years active service, he retired to the



Chairmanship of the Board of the Company he served throughout his business career. Last winter, he read the paper, which is abstracted below, to a small club group in Boston. His spirit of leadership shines brightly in this striking summary of our chemical evolution.

In 1891, chemistry was already an important course at Technology. For 20 years or more great progress had been made in industrial chemistry, and at the time of our graduation, the opinion was often expressed that a rate of progress such as had taken place during the previous years could hardly be expected to continue.

Now, however, it is easy to look back and realize that in 1891 we had merely scratched the surface so far as chemical development is concerned, and what is true of chemistry applies in a measure to all branches of scientific work.

Even then, however, many executives of the old school, practical men, thoroughly trained and of sound judgment, began to realize that chemists and scientifically trained men were not always theorists, and if kept in their proper places and not given too free a hand, might be, and oftentimes were, really worth while; nevertheless, in concerns whose staffs boasted a chemist, it was often difficult for the latter to convince the management of his company that a chemist could effect savings, not only in processes of manufacture, but also in the purchase of raw materials. It was no small task for him to induce the proper executives to make purchases based upon specifications, rather than some trade name; in fact, one job for the chemist or chemical engineer was to "sell himself" to his associates.

I have mentioned that 40 years ago chemistry, as an essential science, was firmly established in this country, and at Technology our course of instruction was comprehensive and thorough; nevertheless, it was recognized that in the domain of chemistry, both theoretical and applied, leadership was to be found abroad, and students seeking a graduate course or a doctor's degree as a rule entered one of the German, or possibly Swiss, universities or technical schools.

There was, of course, a reason for Germany's commanding position, and you are all aware of the fact that although aniline dyes were discovered by Perkin in England, the development of their manufacture and the establishment of a real organic chemical industry took place in Germany. Moreover, the Germans, early grasping the importance of this new industry, bent every effort to the training of youth in their universities, so that the chemical and other industries requiring men with a fundamental knowledge of chemistry, should not lack for good material.

During the decade ending about 1900, so far as economic development along scientific lines is concerned, this country was passing through a transition period. In many industries, established processes were adhered to regardless of their unscientific character. This is not altogether surprising, for one can readily appreciate the reluctance of a manager or superintendent to switch from a thoroughly under-

stood process to an untried one. As an example, let us consider leather. Many of the formulas and methods employed in tanneries had been in use for decades; the final products were known to be absolutely dependable, not alone in appearance, but in every essential quality, such, for instance, as strength and extreme durability. With a new process, however, a few shipments of finished material, apparently perfect, but which later on proved to be defective, might not only result in direct claims, but seriously affect the maker's reputation and jeopardize future business.

With the Twentieth Century, our economic and industrial life entered upon a new era, that of electric power transmission and the long-distance telephone, of the automobile and electrochemistry, of high pressures and temperatures. A new structure was being framed, the foundations of which were laid, in part, at any rate, by the biologist, chemist, physicist, and electrical engineer.

War-Time Changes

During the year 1914, but prior to the outbreak of the War, business was at a low ebb, competition keen, and overproduction evident in many lines. The chemical industry was no exception to the general rule, and for some time potential capacity had been greater than actual consumption requirements. This had served to check new construction and plant extension. With the advent of war, however, the scene shifted. I will not attempt to outline the changes that were brought about in the chemical industry, but it soon became evident that the chemist must play an all-important part in the War, and indeed that, in a large measure, the maintenance of our industrial integrity depended upon our chemical manufacturers. As a result of the situation just outlined, a new chemical industry sprang into being and existing works were largely expanded. Many new plants were built, some of them for purely governmental purposes. Scores of millions of dollars were invested in buildings and equipment, much of which was designed to meet emergency requirements. During the War the slogan was "Production," and very often economy and efficiency were sacrificed in order to secure output. Selling prices became matters of secondary importance and in many cases products were commandeered by the Government.

Looking back, it is difficult to realize the conditions existing in the chemical industry shortly after our entrance into the War. All honor to the men, and women, too, who were "over there," but the strain was terrific here at home for those engaged in the manufacture of chemicals. There was a period of about two years when the major portion of the output of my own company's plants was required, not only in the making of explosives, but in nearly every branch of industry, and knowledge of the fact that any catastrophe at our works would result in the almost complete closing down of New England industries was a responsibility that one could never lay aside. Thus it came about that when the Armistice was signed, the chemical industry found itself in an extraordinary position. For example, the annual output of sulfuric acid—the most important of all chemical products—had increased from approximately 4,000,000 to more than 9,000,000 tons, and huge stocks of acids and other chemicals used in the manufacture of munitions were on hand and in process. For a time, conditions were demoralized and the market values of many commodities dropped to levels far below the cost of production.

This was followed by a period of intense activity, and then came one of reconstruction and adjustment; labor was scarce and wages high—very different from the situation that now prevails. Then, too, industry was out of balance; in the case of some commodities a surplus existed, whereas in others there was an actual shortage. Lack of knowledge, or judgment, as to the real situation, together with wildcat development in some lines of production were in part responsible for this state of affairs. Exaggerated ideas as to the possibilities in chemical development were readily accepted by thoughtless investors, and many abandoned plants bear witness to this fact.

Pride Justifies Confidence

On the whole, however, we may survey with pride the results accomplished by American chemists and chemical engineers, during and since the War and I do not know of any better evidence that could be presented than the fact that today this country is entirely independent so far as chemical products are concerned. This statement applies to organic, as well as inorganic, chemicals, and it is a satisfaction to know that American manufacturers now supply more than 90% of the country's entire requirements of dyestuffs, pharmaceuticals, photographic and fine chemicals.

Without doubt we are now in the midst of a depression greater, at any rate, than any that have occurred during my business career, and furthermore, the condition is not a local one, but world-wide; nevertheless, chemists and chemical engineers are pushing their research work more vigorously than ever, and this alone gives us reason to believe that the outlook for further advance in civilization and future prosperity was never brighter than at the present time. In less than 15 years, the initiative in scientific research has passed, in considerable measure, from Germany to this country, and this is a fact of far-reaching significance.

As a result of applied chemical research, a few essential raw materials are now made to yield a host of useful products, and this is an age of progress, in which "the glory of the heavens is being disclosed, and the structure of the atom and the molecule laid bare." Mindful of these blessings, and with ever-increasing knowledge, we may face the future with confidence and the assurance of revelations to come that are beyond the scope of our imagination.

The Chemical Markets of Asia

By Charles E. Mullin

This is the first of a series specially written for CHEMICAL MARKETS on the chemical and related industries and business conditions in Japan. Later articles will deal with the chemical industries and markets of other Asiatic countries. Dr. Mullin is well acquainted with the American and European methods, products, and industries, and is spending a year in the Far East. CHEMICAL MARKETS has arranged to carry these papers and they will appear as a regular feature.

ASIA is the best export market today for American chemicals. It is a low-price market and, especially under the present conditions of exchange, offers many obstacles; but the largest part of the world's population live in the Far East and chemical manufacturing industries in the orient are practically undeveloped. While America obtains a small share of this business, a far larger part goes to Europe, largely due to certain marketing conditions controlled entirely by the producer or manufacturer.

Japan is not, and probably never will be, our best export market for dyestuffs and chemicals. Japan is herself making every effort to capture the entire Eastern trade—and has certainly succeeded in "capturing" the Korean and Manchurian markets, but this has not helped her much at certain other quarters, particularly in China. It may appear that the chemical industry of Japan is, therefore, of little interest to American manufacturers, but the exporter will find it of great interest for several reasons. Japan is located nearer the Asiatic market than any other manufacturing country. There are more Japanese living in China, the best market for many of these products, than all other foreigners combined. The Japanese are themselves Asiatic and are therefore able to understand the psychology and needs of this market better than any other race. It is possible to obtain as good an idea of the merchandise desired by the Chinese by a study of the Japanese exports to China as in any other way.

Japanese merchandise, as a whole, has been condemned as "junk." It is true that much Japanese export stuff is just that—junk. But it meets the Asiatic demand.

In discussing the use of a certain medicine in Asia with an English physician located in Korea recently, he made the statement that "It is not a matter of how good the drug is, but of how cheap. The medicine may be the best in the world for a certain purpose, but if it is not very, very cheap, we cannot use it on the masses." Sad but true, and a lot of the Japanese "junk" is made to fill just this low-price demand. Their lack of judgment is to think that America also wants this same trashy grade of merchandise.

Number of Factories and Employees in Japan in 1928*

	Number of Factories			*Number of employees***		
Year	*Motive Power*	*Manual Power*	*Total*	*Male*	*Female*	*Total*
1924	37,141	11,253	48,394	859,783	929,835	1,789,618
1925	38,221	10,940	49,161	852,554	955,827	1,808,381
1926	41,514	10,392	51,906	893,834	981,361	1,875,195
1927	43,726	9,954	53,680	923,201	975,671	1,898,872
1928	46,247	9,701	55,948	948,876	987,373	1,936,249

*This table includes only plants employing five or more regular workmen so that innumerable domestic or home plants are omitted.

**Many of the employees of both sexes are mere children.

In my opinion, American chemical exporters, as a group, know far less about the Asiatic export market than either their English or Continental competitors, and this applies especially to the dyestuffs and chemicals field. Some single competing European firms have as large a staff in one office in Japan or China as the largest American firms combined have in the whole country. These Europeans are well informed. They realize that the East offers the one big market of the near future, and are laying a foundation accordingly. From my own observations I believe they are already reaping the dividends of this policy.

A recent article published in Japan upon Japanese industries states that "Up to a score of years ago the chemical industry of Japan was conducted as a home industry on a small scale, in such lines as pottery making, paper making, lacquered ware, and the like. In order to keep pace with the progress of the times, Japan has adopted the Western models after which manufacturing plants have been organized on a large scale one after another. Thus the development of the modern chemical industry was firmly laid. Many up-to-date lines of this industry also have been imported from Europe and America in rapid succession, while the older lines have steadily been improved."

The above is, of course, true; but I was surprised to find these domestic plants, often employing only the members of the immediate family or with one or two apprentices, manufacturing paper, rubber goods, celluloid articles, paint, certain dyestuffs, medicines and pharmaceuticals, many food products including the fermented sauces, real and synthetic liquors, soft drinks, isinglass, soaps, matches, fertilizers, leather, oils, glassware, porcelain, pottery, tile, and brick, etc. In selecting illustrations for the papers on the Japanese chemical industries, I have particularly endeavored to select those showing the home industries, for the reason that these domestic plants are so very different from the usual American plants. On the other hand, many of the larger plants, appear in pictures to be quite similar to their American or European models.

The war gave Japan an opportunity that was never before equalled and probably never will be again. Chemical demand existed in every part of the world and she supplied as much as possible. At the close of the war, she lost most of the business in Europe and America but, by specializing upon the Asiatic market, she was able to keep up her trade very well. Like all other parts of the world, Japan has felt the economic depression severely and the present Chinese boycott has had more far-reaching effects upon her business and industries than will be imagined, so that at present there is a severe crisis in Japan, as indicated by the gold embargo and the rapidly decreasing value of the yen. Many plants are closed down entirely. Very few are running full time. This applies to practically every phase of the chemical and other industries.

During the war prices were high, the Japanese made enormous profits, and some huge fortunes were piled up, but it is claimed that many of these have been reduced very considerably during the post-war period. Judging from the experience of other parts of the world, this is not entirely unexpected, especially as the new Japanese industries did not have the years of pre-war experience to assist them in the post-war business and marketing competition. Also, many Japanese war-time products were of such inferior grade that they severely handicapped the marketing of all Japanese products. Chemists who had to use Japanese glassware, such as beakers, etc., during the war will well remember the experience.

Even today Japan is producing many inferior products and the trashiest of these are made for export. A great many other products are not of as high grade as the corresponding western articles. The average purchasing power of the Japanese workman is low and these articles are made to meet his pocket-book. However, Japan is manufacturing some of the

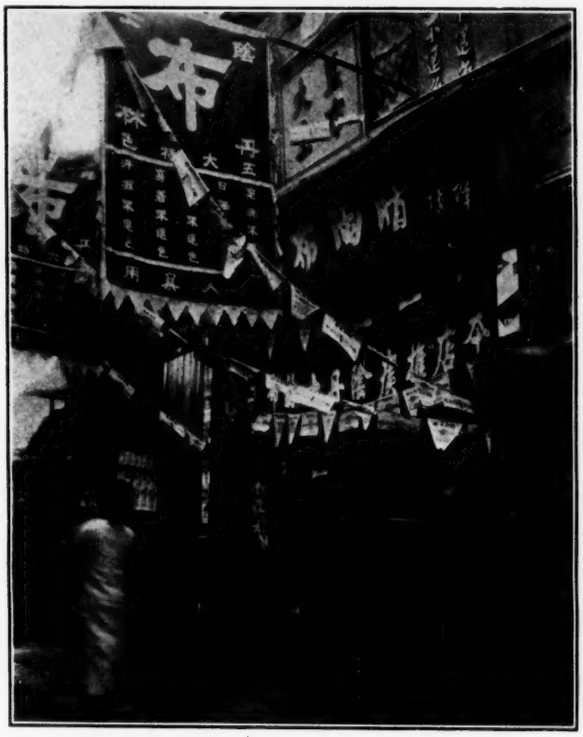
Number of Plants and Employees in Various Industries in 1928*

Industry	*Motive Power Plants*	*Manual Power Plants*	*Number of employees*
Textile	17,126	2,356	998,246
Mechanical	3,751	341	121,703
Chemical	2,310	436	120,152
Foodstuffs	10,476	2,216	167,651
Machinery and Tools	4,096	434	250,657
Ceramics	1,734	1,048	68,248
Wood	3,294	769	56,631
Printing and Bookbinding	2,412	103	54,220
Gas and Electricity	404	41	8,642
Miscellaneous	2,860	1,959	90,109
Government works	338	33	136,032
Total	46,247	9,701	1,936,249

*This table includes only plants employing five or more workmen.

finest, most beautiful and, to my idea, artistic textile fabrics in the world. These are practically all made for specific uses, are insuitable for other purposes, and are almost unknown outside of Japan.

The latest census statistics available upon the Japanese industries are those for 1928. Probably in many ways these are just as satisfactory as those of a later date as they cover the conditions before the depression. In these statistics of plants, only plants employing five or more regular workmen are included so that the smallest home industries are omitted. On this basis, Japan had 55,948 factories at the end of 1928. Osaka is the manufacturing metropolis with 7,747 or 14 per cent of all the factories, and is followed



Advertising Indanthrene dyed goods in front of a small dry-goods shop in Chungking, 1500 miles inland on the Yangtsze River in China

by Tokyo with 7,054 or 12 per cent of the factories. Aichi prefecture has 5,606 or 10 per cent of the plants.

The manufactured products had a total value in 1928 of 7,377,954,096 yen or $3,688,977,048.00. On the basis of 55,948 factories, this is an average production of 131,387 yen or $65,693.50 per plant and 3,810 yen or $1,905.00 per workman. These figures may be further analyzed by industries as below.

Industry	Total value of products in yen	Average production per workman in yen
Textiles	2,848,383,292	2,853
Foodstuffs	1,136 544,134	6,780
Chemical industries	935,616,743	7,787
Machinery	629,925,834	2,513
Metals	544,801,622	4,476
Ceramics	203,162,267	2,977
Lumber and wooden ware	193,548,905	3,418
Printing and bookbinding	184,034,697	3,394
Gas and electricity	172,910,334	20,008
Other industries	528,026,268	

The nominal value of the yen in 1928 was $0.50 U. S. currency.

These statistics may be analyzed or supplemented by further details regarding the leading divisions of the above industries.

Industry	*Value of production in yen*
Textiles	
Raw silk	782,298,445
Cotton yarn	572,422,652
Cotton fabrics	622,340,460
Silk fabrics	268,235,795
Wool fabrics	190,418,285
Metals	
Castings	71,343,435
Gilded metal wares	41,602,395
Copper wire	25,496,351
Insulated wire	92,808,367
Machinery	
Vehicles	106,033,009
Vessels	48,894,095
Electrical apparatus	67,159,783
Ceramics	
Cement	88,156,414
Glass	44,681
Chemical Industry	
Paper and pulp	182,309,382
Artificial fertilizers	111,024,278
Industrial chemicals	86,635,266
Rubber goods	70,270,539
Patent medicines	47,446,628
Foodstuffs	
Sake	293,386,838
Sugar	191,117,838
Flour	132,228,971
Soya products	84,086,065
Timber	118,566,587
Electricity	120,574,939
Sewed articles	78,212,490
Cotton and hemp ropes, nets, etc.	23,761,311
Paper manufactures	23,534,172
Leather goods	16,149,579

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*The author is indebted to the Japanese Department of State for Commerce and Industry and the Year Book for information and statistics used in these papers.

Asphalt Emulsions Statistics for 1931

Ten companies made asphalt emulsions in 1931. The principal plants producing emulsified asphalt were located near San Francisco, New Orleans and Baton Rouge, New York, Chicago, and Philadelphia.

Stocks of emuslified asphalt held by producers increased from 569,235 gallons, or 2,419 short tons, on December 31, 1930, to 756,378 gallons, or 3,215 tons, on December 31, 1931. During 1931 a total of 158,009 gallons, or 672 tons, was employed for miscellaneous needs compared with 300,000 gallons, or 1,275 tons, in 1930.

Sales of emulsified asphalts and fluxes by producers increased 37.1 per cent in quantity, from 26,631,806 gallons, or 113,185 short tons, in 1930, to 36,503,723 gallons, or 155,140 tons, in 1931, but only 31.5 per cent in value, from $2,692,928, in 1930, to $3,542,118, in 1931. The average sales value per gallon decreased four per cent, from $0.101 in 1930 to $0.097 in 1931.

Platinum Alloys Find New Uses in Chemical Process Industries

By Edmund R. Thews

Many stubborn corrosion problems and particular demands for apparatus and equipment that will resist chemical reaction may be economically solved now by the use of platinum alloys, for the price of both platinum and silver is down to a point that makes them possible engineering materials. This review of these alloys is, therefore, most timely and suggestive, and we are glad to reprint it from "The Chemical Age" (London).

THE platinum group of metals, including platinum, iridium, osmium, palladium, rhodium, and ruthenium, while exhibiting certain properties characteristic of all of them, may be subdivided into three pairs, each of which differ from the others in certain individual chemical properties, *viz.*, platinum-palladium, iridium-rhodium, osmium-ruthenium. The chief chemical differences between the metals of these three basic groups, in their action towards mineral acids, are (1) platinum and palladium are the only two metals of the platinum group attacked by aqua regia; (2) palladium is the only metal easily dissolved by boiling concentrated nitric acid; and (3) only platinum and palladium are attacked by boiling sulfuric acid.

All the platinum metals as well as gold are highly resistant to the other chemical reagents at ordinary temperatures, although they differ considerably in their reactions with fused alkalies. Fused sodium peroxide is the most corrosive, and all of the noble metals are more or less attacked by this reagent, their resistance decreasing in the following order: Rhodium, iridium-osmium-ruthenium, gold-platinum-palladium. Fused sodium hydroxide attacks osmium strongly. Platinum, rhodium and ruthenium are somewhat corroded by this reagent, while palladium, iridium and gold are inert to its action. Fused sodium carbonate exerts a rather slight action on platinum, rhodium, and osmium, but does not touch gold and the other platinum metals. Fused potassium bisulfate strongly attacks rhodium; it is less corrosive towards platinum, palladium and osmium but without any action on iridium, ruthenium and gold. Fused alkali cyanides dissolve gold but exhibit only a slight corrosive action on platinum and palladium, being without action on the other platinum metals. Similar differences of properties are exhibited by the platinum metals towards the various halogens. Chlorine, iodine and fluorine attack iridium, osmium, rhodium and ruthenium but little; chlorine is strongly corrosive towards platinum and palladium at red heat, while palladium is strongly attacked by iodine, and platinum by fluorine, at elevated temperatures.

Platinum-Iridium Alloys

The alloys of these two metals are the most widely used of all the platinum metals. Their hardness increases with rising iridium content up to 40 per cent iridium, decreasing gradually as this point is exceeded. One of the important technical advantages of these alloys is that this increase of hardness is not accompanied by a corresponding increase of brittleness, although certain impurities if present in one of the alloying constituents may cause rapid embrittling of these alloys. On heating the platinum-iridium alloys to temperatures of 1,650-1,900° F. their surface is turned black by oxidation. This coloration disappears at higher temperatures, not however by reduction of the oxide, but by volatilization, the basis of the black oxide being the volatile iridium. Extended heating of these alloys at temperatures above 1,650° F. will therefore be accompanied by a gradual loss of weight; they are not, for this reason, as well suited for pyrometric purposes as the platinum-rhodium alloys which do not suffer any loss of weight at much higher temperatures.

The chemical resistance of the platinum-iridium alloys to the action of nitric acid, aqua regia and sulfuric acid increases with rising iridium contents. The five per cent alloy is easily soluble in hot concentrated aqua regia, the 10 per cent alloy is noticeably less soluble, the 20 per cent mixture dissolves very slowly, while the alloy with 30 per cent iridium is insoluble for all practical purposes. The resistance of the platinum-iridium alloys to boiling concentrated sulfuric acid also is very much more pronounced than that of the unalloyed platinum. Experiments carried out at the Heraeus plant indicated that if the loss of weight of pure platinum suffered by 40 days of boiling in concentrated sulfuric acid is assigned the value 100, the relative loss of a five per cent platinum-iridium alloy is 73, and that of a 10 per cent alloy, 58 (Reinglass, "Chemische Technologie der Legierungen," p. 433). These alloys, however, possess the serious disadvantage that on continued employment in connection with boiling sulfuric acid they gradually become brittle.

Of considerable importance are the relatively high strength values of technical platinum-iridium alloys employed in the chemical industries. Hardness as well as tensile strength increases with rising iridium contents up to 35 per cent. A peculiar characteristic of the platinum-iridium alloys rich in iridium is the singular effect of annealing at various temperatures on the strength and softness of the metal. While with rising annealing temperatures the softness of pure platinum and of the lesser platinum-iridium alloys (up to 10 per cent iridium) is gradually decreased, the iridium-rich alloys exhibit constantly decreasing softness values and increasing tensile strengths with rising annealing temperatures up to 1,400° F. On being subjected to higher annealing temperatures the strength values of these alloys exhibit a downward tendency. The substitution of iridium in these alloys by cheaper metals is rarely practiced, the chemical resistance of all such alloys being lower than that of pure platinum. The best results may, perhaps, be obtained with platinum-gold-palladium alloys. Binary platinum-gold alloys are hard but brittle, while palladium alone exerts only a limited hardening effect.

Platinum-Palladium Alloys

The platinum-palladium alloys, including the palladium-rich mixtures, are much softer than the other platinum alloys employed in the chemical industries. The two metals are miscible in all proportions and excel in workability. On being alloyed with platinum, palladium loses practically all of its individual characteristics. For instance, while pure palladium is easily soluble in boiling nitric acid, the platinum alloy with 25 per cent palladium is practically insoluble in this reagent. Also the coloration exhibited by pure palladium on heating to elevated temperatures does not appear on the 25 per cent platinum alloy. Since the oxides of both platinum and palladium volatilize at elevated temperatures, their alloys may be heated to any industrial temperature without suffering noticeable loss of weight. The physical properties of platinum are not changed by the addition of palladium as much as by that of any of the other platinum metals. The hardness values of these alloys do not nearly reach those of the corresponding platinum-iridium alloys. Increasing gradually, the hardness of a 30 per cent alloy is 180° Brinell (105° Brinell for the annealed alloy); beyond this percentage, the hardness values of these alloys are gradually lowered. However, the frequent assertion that certain platinum-palladium alloys are softer than pure platinum is erroneous, the hardness figures for hard and annealed platinum being 97° and 47° Brinell respectively.

On account of their lack of hardness, binary platinum-palladium alloys are rarely employed for construction work in the chemical industries, much better mechanical properties being obtained with the platinum-gold-palladium alloys or even with the binary palladium-gold alloys. A proprietary alloy "Rhotanium," containing, besides gold, 10-40 per cent of palladium has been recommended as a substitute for platinum for electrical and dental purposes as well as for certain chemical purposes; these alloys are claimed to be very resistant to hydrochloric, hydrofluoric and sulfuric acids and fused soda, and to be easily rolled and welded.

Platinum-Rhodium Alloys

The platinum-rhodium alloys, while exhibiting remarkable mechanical and chemical properties, are not being employed extensively, a fact entirely due to the small quantities of rhodium produced. In its hardening effects on platinum, rhodium stands midway between iridium and the weak hardening agent palladium, while its reaction towards atmospheric oxygen is similar to that possessed by platinum; the very thin film of oxide produced at elevated temperatures is completely reduced back to metal at a somewhat higher temperature. Rhodium oxide is not volatile at ordinary temperatures. These platinum-rhodium alloys are quite useful for a variety of purposes, one of its most well known applications being in the resistance wires of the Le Chatelier pyrometer couples (10 per cent rhodium). Compared with the platinum-iridium couples the 10 per cent rhodium alloy possesses the considerable advantage of remaining constant at temperatures as high as 2,900° F.

Platinum-rhodium alloys are also employed in the modern nitric acid contact process in which an ammonia-air mixture (10:1) is passed through platinum-rhodium gauze serving as catalyzing agent. In replacing the platinum gauze formerly employed almost exclusively, the platinum-rhodium gauze exhibits a contact efficiency of almost 100 per cent. In America, 3.5 per cent platinum-rhodium alloy is being

employed in the production of laboratory crucibles and dishes, the rhodium serving to improve the hardness and tensile strength of the platinum; the resistance of this alloy to the action of corrosive liquids and fluxes is considerably higher than that of pure platinum, while the very low degree of volatility of platinum is still further reduced by rhodium. The latter property of rhodium has caused this metal to be extensively employed in the production of 10 per cent platinum-rhodium alloys for resistance wires in electrical furnaces, particularly where the furnace temperatures exceed 2,000° F. Apart from their high resistance to elevated temperatures, these wires exhibit a high coefficient of electrical resistance and a lower speed of crystallization than platinum, so that in spite of higher initial costs they are frequently preferred to platinum wires in electric furnace construction.

Platinum-osmium Alloys

In platinum-osmium alloys there is an exceedingly powerful hardening effect exerted by the osmium on the platinum, but in view of the high degree of volatility of osmium oxide at comparatively low temperatures, and since the osmium forms oxide even if present in the alloyed state, this property actually prevents any extensive use of the metal and its platinum alloys. The poisonous effects produced in the human system by osmium oxide resembles somewhat the indications produced by arsenic and cadmium vapors, besides causing serious affections of the eyes which in a number of cases have led to blindness. The general properties of platinum-ruthenium alloys exhibit a strong resemblance to those of the respective osmium alloys. Like osmium, the hardening influence of ruthenium on platinum is more than twice that of iridium, while the toxic properties of ruthenium oxide are very much like those of the osmium tetroxide; however, its rate of volatilization is not nearly as high as that of the latter oxide, and while ruthenium-rich platinum alloys will exhibit a certain loss of weight on being heated to high temperatures, this loss becomes almost negligible with comparatively small ruthenium contents. An eight per cent platinum-ruthenium alloy, the hardness of which corresponds to that of a 20 per cent platinum-iridium alloy, loses only 0.026 per cent by weight within one hour of annealing. Small amounts of ruthenium are being employed, together with iridium, as a hardening agent in platinum alloys. Instead of adding, say, 15 per cent of iridium to attain a certain degree of hardness, an alloy consisting of 91 per cent platinum, five per cent iridium and four per cent ruthenium may be used with advantage. While the platinum-rhodium alloys may be employed for temperatures up to 2,900° F., iridium-ruthenium alloys with 10 per cent ruthenium are serviceable for temperatures up to, and above, 3,800° F.

EDITOR'S CORRESPONDENCE

BERYLLIUM PRICE CORRECTION

I was very sorry to note, upon perusing your most recent number, that you have perpetuated and made worse a typographical error in the original paper of Alfred Stock on beryllium, which was preprinted for the recent meeting of the American Electrochemical Society. Attention was called to the error at the meeting and it will be corrected in the published volume. In the text of the paper, it is stated that "beryllium costs from 18 to 65 cents per gram ($8.00-$30.00 per pound)," and in your headlines you state that beryllium can be produced to sell at $20.00 per pound. A little more careful scrutiny would have shown you that the gentleman who made the calculation of the pound price slipped on his decimal point, and that 18 cents per gram is about $85.00 per pound, rather than $8.00, while 65 cents per gram is approximately $300 00 per pound rather than $30.00. What is a decimal point between friends?

Seriously, there has been so much publicity in newspapers about processes alleged to produce this metal for a fraction of its present price, which processes upon investigation fail utterly to bear out such claims, that the innocent typographical error in your apparently authoritative article might do serious damage. So far as I have been able to determine, the lowest price at which beryllium has been offered in this country by a bona-fide producer is about $200.00 per pound, although certain alloys have sold as low as $50.00 per pound of contained beryllium. I hope you will be able to correct this error in your next issue.

Very truly yours,

FRANCIS C. FRARY,
Director Research Laboratories,
Aluminum Company of America.

New Kensington, Pa.
July 21, 1932

Company Booklets

J. T. Baker Chemical, Phillipsburg, N. J. The "Chemist Analyst" for July features a new method of bronze analysis by P. W. Uhl.

Givaudan-Delawanna, 80 5th Ave., N. Y. City, has just completed two bulletins on perfuming fabrics, describing the results of experiments conducted by Dr. Donald A. Laird of Colgate.

Grasselli Chemical, Cleveland. A new 31 page, profusely illustrated, booklet describing in detail "Cadalyte—A Process and Product." Should be in every plater's library.

Mallinckrodt Chemical, St. Louis. The July price list.

Merck & Co., Rahway, N. J. "Merck's Report" for July contains an interesting article on prescription department sales analysis based on the survey recently made in St. Louis.

Merrimac Chemical, Everett Station, Boston. The 4th edition of the well-known "Industrial Chemicals—Their Properties, Uses, Shipment" has been considerably enlarged and revised with the addition of further valuable information on shipping, containers, etc.

Permutit Co., 440 4th Ave., N. Y. City. "Purifying Water for the Textile Industry" is a 12 page booklet covering new developments in zeolite water softening.

Rolls Chemical, Ellicott Square Bldg., Buffalo. "Retorts" is a particularly interesting dealer organ.

Rossville Commercial Alcohol, Lawrenceburg, Ind. The June number of "Rossville Alcohol Talks" is devoted to alcohol and the war against pestilence.

A Resume of Wastes

By J. Wrench
Sales Manager, Industrial Chemical Sales Company, Inc.

"WASTE not: want not." But it did not require a major depression to drive home to business leaders the truth of this copy-book philosophy. Many executives in the past have proved their acumen not only by recognizing this truism but by capitalizing it. Well managed companies have been unceasing in research for uses for waste or by-product materials, nevertheless, the present economic disturbance has demonstrated the intrinsic value of so-called waste materials in a way impossible before the crash.

Waste by-products, like the poor, are always with us. But modern industrialism deplores waste and seeks to salvage all by-products. Chemistry has played a big hand in every field, but we must admit that what Doctor Teeple called "progress by injunction" was an early motive. The insistance of health agencies, city, state, and federal, that nuisances be eliminated was often the inspiration of waste recovery in the early days. Poor business gives greater appreciation of the "gold mine" in the scrap-pile.

By-products do not lack attention today. Dwindling profits on primary materials have turned us to by-products as a life preserver for dividends. "Economy" is the watchword today, as "Expansion" was during 1929. Is it stretching the thought too much to say that executives are more by-product minded than ever?

It is astonishing to check up the progress made in the past ten years in commercial utilization of waste. Blackstrap molasses, by-product of the cane sugar industry, has all but supplanted grains as the basis for alcohol. From the stalks of the cane is produced, bagasse, from which in recent years has been developed Celotex, widely used as an insulating material, also as a wallboard with many distinct advantages. In the alcohol industry, waste carbon dioxide gas is employed for the production of "dry ice" an industry growing at a startling rate. Fusel oil is a solvent in lacquers, and amyl alcohol and amyl acetate are important materials with widely diversified uses. Residue from alcohol distillation is a small, but rather important local source of potash for fertilizer.

Perhaps the most generally known example of waste sold at a profit is in the meat-packing industry where it is literally true that nothing is lost but the squeal.

CANE SUGAR
- Molasses
- Alcohol
- Cattle Feed
- Glycerine
- Table Syrup
- Bagasse (Celotex)

ETHYL ALCOHOL
- CO_2 (Dry Ice)
- Fusel Oil
- Amyl Alcohol
- Amyl Acetate
- Potash

CORN STARCH
- Corn Oil ,"Mazola"
- Syrup, "Karo"
- Adhesives
- Dextrose

MEAT PACKING
- Leather
- Glue
- Gelatine
- Lard
- Blood Albumin
- Fertilizer
- Tallow
- Bone Meal
- Bone Charcoal
- Buttons

COTTON
- From hulls-padding for mattresses
- Cattle Feed

SOAP
- Stearin Pitches
- Glycerine
- Stearic Acid

PAPER
- Roofing Materials
- Old paper reclaimed

SODA PROCESS
- Activated carbon

SULFATE PROCESS
- Turpentine
- Rosin
- Fatty acids for soap

SULFITE PROCESS
- Alcohol (Ethyl)
- Binder in foundry work
- Binder for wads
- Tanning of leather
- Cymene

COAL DISTILLATION
- Crudes
- Intermediates
- Dyes
- Drugs
- Perfumes
- Motor Fuel
- Solvents
- Pitch

HARD WOOD DISTILLATION
- Charcoal
- Acetate of Lime
- Acetone Oils
- Acetic Acid

PINE WOOD DISTILLATION
- Rosin
- Turpentine
- Pine Oil
- Pine Tar
- Medicinals
- Disinfectants

COTTON
- Cottonseed Oil
- Solid Fats
- Cellulose

MISCELLANEOUS
- Ford's Offal Wood: Charcoal in briquettes for insulation.
- Pits from fruit packing industry: solvents and decoloring carbon.
- London Water Supply: calcium carbonate used in tooth paste.
- Pig Iron-Blast furnace slag: Portland cement; fertilizer.
- From garbage: fertilizers, grease, clinker for roads, scrap metal.
- From South American Cohune Nut waste: lactic acid.
- Bittern from salt manufacture: bromine.
- Sump Water from California oil wells: iodine.
- Pomace from apples and citrous fruits: pectin.
- Cocoanut shells: gas mask carbon.
- Waste pine chips: Masonite.
- Sawdust: ethyl alcohol, wood flour.

Besides sustaining the leather industry, the raw materials of the stockyards find profitable outlets for the manufacture of glue, gelatine, lard, blood albumin, tallow, bone charcoal, and fertilizers.

Coal distillation gives a whole series of vitally important products: intermediates, dyes, medicines, perfumes, motor fuels, and solvents make our everyday existance easier and more satisfactory. Wood distillation is a classic example of revolutionary change. Originally, charcoal was the primary product with little thought to anything else. For many years charcoal has been a by-product of a process designed to produce wood alcohol and acetate of lime, which in turn is converted into acetic acid. Will the newer synthetic processes for producing acetic acid and methanol again change the status of the hardwood distillation industry completely? In the South rapid strides have been made in waste elimination in the naval stores industry by the introduction of the steam distillation process. Pine oil, pine tar, medicinals, and disinfectants are a few of the products developed by the chemist in a field where for many years rule of thumb methods were accepted without question.

Mazola is corn oil, *Wesson Oil* is produced from cottonseed oil, *Crisco* is made from hydrogenated cottonseed oil, *Masonite* is derived from waste pine chips. These are names we find in almost every national magazine—yet they are by-products that have proven to be particularly remunerative. Rayon is made from cotton and cotton waste; lacquers are made from a cellulose base which is in turn a by-product; glycerine, a by-product of the soap industry is employed as an anti-freeze for automobiles; nicotine sulfate is manufactured from waste leaf stems; we could go on almost indefinitely showing how by-products are employed hundreds of times daily.

Despite all so far accomplished, more will be done in the future, but financially successful by-products are not the result of guess work. Often they represent years of research work and large sums of money. However difficult the latter may appear at the moment it is essential to bear in mind that research departments, out of which by-products are born, safeguard the future like an insurance policy. The progressive, forward looking company simply cannot afford to take chances.

China Clay Consumption Reviewed

China clay, applying the term only to the highest form of refined natural clay (residual or sedimentary) suitable as a filling or coating material for high-grade papers and in fine ceramic wares, is produced in quantity in only six countries according to a recent report of the Department of Commerce appearing in *Commerce Reports*. Their output makes up about 95 per cent of the world total, and, in units of 10,000 long tons, is estimated as follows: The United Kingdom, 80; Germany, 48; the U. S. and Japan, each 43; Czechoslovakia and China, each approximately 40. Japan and China do not figure prominently in international trade, and the consumption of the Czechoslovak and German clays is confined largely to countries immediately adjacent. Exports from other countries, excepting Great Britain, are insignificant.

During the past 10 years consumption of china clay and paper clay in the U. S. has averaged approximately 695,000 short tons, about one-third of this quantity consisting of imports, which come almost entirely from Fowey, in Cornwall. Total consumption in 1930 was about 35 per cent above that in 1914. Imports represented 68.5 per cent in 1914 and about 32 per cent in recent years. It is evident that notwithstanding a pronounced increase in demand, correspondingly rough to the rising production of high-grade paper, an increasing proportion has been met by domestic producers through intensive effort involving geological inquiry, beneficiation in preparation, and improved marketing and distribution.

Dependence upon foreign countries for materials essential to normal industrial life becomes strikingly evident only when such supplies are cut off, as in time of war. Consumers of china clay were faced with such restrictions in 1915 and immediately succeeding years, and, as a result, the U. S. today is in a more favorable position in two respects: First, potential clay-producing regions have been combed thoroughly for suitable deposits and production processes have been improved, so that domestic output now includes more and better grades; second, the partiality for British clays on the part of manufacturers of paper and other products has been overcome to some extent. Present consumption of imported clays, therefore, appears to be approaching a minimum.

Georgia is the principal domestic source of china clay for coating and filling purposes, followed by South Carolina, and, to a less extent, by Pennsylvania. The largest consuming centers are in the North, and transportation—by rail, water, or a combination—interferes somewhat with a greater utilization of American clays. In some instances, however, domestic china clays are delivered at consuming points at prices considerably below those for imported but are not considered so satisfactory.

An impressive quantity of imported china clay finds no competition with the natural domestic product, and any extensive consumption for paper or ceramic wares (not structural clay products) includes some foreign grades. The opinion exists, however, that if the U. S. were to be cut off, as before, from these foreign sources, consuming industries would not be jeopardized seriously.

In the following table appears a summary of the U. S. domestic and import trade in china clay over the period 1921 to 1930, inclusive, domestic production in the same years, and average unit values, pertaining to f. o. b. invoice, point of shipment:

U. S. Consumption of China and Paper Clay[1]

Year	*Production Long tons*	*Value per ton*	*Imports Long tons*	*Value per ton*
1921	145,291	$10.86	145,452	$10.63
1922	246,138	9.53	276,907	10.71
1923	300,717	9.73	277,944	10.96
1924	291,617	10.02	315,289	10.11
1925	327,963	9.82	332,636	9.61
1926	385,906	9.78	353,767	9.84
1927	405,576	9.40	302,691	9.70
1928	442,984	9.23	274,379	10.80
1929	462,651	9.25	249,983	10.80
1930	455,673	8.49	210,938	10.42

[1]Converted from compilation by the U. S. Bureau of Mines.

Official statistics show that in 1930 the U. S. imported 210,911 long tons of china clay valued at $2,197,197. Preliminary figures for 1931 record imports of 135,210 tons, valued at $1,056,617, in that year, of which 102,312 tons, valued at $862,189 ($8.43 per long ton), entered during the first nine months. Almost the entire amount came from the United Kingdom and a decided proportionate drop in valuation during the final quarter is attributed to the change in exchange rates following British abandonment of the gold standard. British records show that the average export price of china clay for the U. S. was $6.12 per long ton during the final quarter of 1931, compared with an average of $10.55 in 1930. (Compare corresponding figure in table, based on American statistics.)

Dyestuff Economics

Making, Naming, Pricing, Selling

By J. Blair, B. Sc.

London Manager, Clayton Aniline Co., Ltd.

SYNTHETIC dyestuffs are organic chemical compounds which have the property of dyeing certain fabrics and materials in specific shades, with a certain degree of fastness to various actions, such as light, washing, etc. Without this property of fastness they would be merely stains and not dyestuffs. They are applied to various materials, wool, cotton, silk, leather, wood, fat, etc., according to their solubility, mainly in an aqueous solution, but also in spirit or fat solutions, or, if insoluble, by bringing them into solution by reduction as with the so-called vat colors.

Twenty-six Dye-types

The term "aniline dyes" is often used, but as only a small percentage of the organic dyestuffs is made from aniline, this term is not truly descriptive. The dyeing property is due to their particular chemical constitution: they contain so-called "chromophore and auxochrome groups." According to the chromophore groups, there are about 26 classes of dyestuffs. The auxochrome groups, amido, hydro, oxy, sulpho, carboxyl, etc. are common to all dyestuffs. For practical purposes and having regard to the manufacture they might be classified as soluble dyestuffs and insoluble dyestuffs. The first category would contain the most important classes, like azo colors, triphenylmethane, etc., the other class the sulfur, indigo, and anthraquinone dyestuffs.

Dyestuffs are manufactured from coal tar which, before 1856, was a waste by-product of the gas works and was used mainly as a pigment or a fuel. When coal is distilled for the manufacture of gas the main by-products are benzene, toluene, xylenes, phenols, cresols, naphthalene, and anthracene. A ton of coal gives approximately two gallons of benzene, three gallons toluene, 20 lb. naphthalene, and about six lb. anthracene. The color manufacturer uses these products and he purchases them from the coal-tar distillers, that is to say, the coke-oven proprietors and the gas companies.

Before 1914 color manufacturing was the only outlet for these products, but the remarkable growth of motoring and the suitability of benzene as motor fuel has quite reversed conditions, and today the dyestuff manufacturer is only a 5% user of benzene; 95% of the benzene manufactured goes to the motor trade. This means that the color manufacturer has to pay the price of motor spirit for his raw material, and I would like color users to bear this in mind when comparing prices of dyestuffs today and twenty years ago; instead of getting benzol at a few pence per gallon, a price of nearly 2s. has to be paid for pure benzol. An import duty on petrol has a repercussive effect on the price of benzol.

In addition to coal-tar products, the dyestuff manufacturer uses many thousands of tons of heavy chemicals, such as oleum, sulfuric acid, caustic soda, hydrochloric acid, nitric acid, soda ash, and bisulfite.

The Intermediates

The process of manufacturing dyestuffs from coal-tar products is accomplished *via* certain intermediate products, such as aniline, toluidine, naphthylamine, naphthol, anthraquinone, etc. These intermediates are made through insertion of the so-called auxochrome groups into suitable organic compounds, and may contain one or several of them, like naphthylamine sulfonic acids (*e. g.*, naphthionic acid), naphthol-sulfonic acids (*e. g.*, Neville Winter acid, Schaeffer acid, etc.), or dihydroxynaphthalene, aminophenols and aminonaphthols and their mono- and poly-sulfonic acids, like gamma acid (aminonaphtholmonosulfonic acid) or H acid (aminonaphtholdisulfonic acid).

For the purpose of manufacture we might take three classes: Intermediate products, vat dyestuffs, and soluble dyestuffs, because there are, generally speaking, quite different chemical reactions.

Benzene consists of six atoms of carbon joined together and to every atom of carbon is attached an

atom of hydrogen. This makes the familiar benzene ring illustrated by the hexagon. Naphthalene is the double benzene ring and anthracene the triple one. By substitution of the hydrogen atom with other elements or compounds of elements, we get all the organic chemical products, colored and uncolored, which it is the business of the color manufacturer to make.

The manufacture of intermediates consists of sulfonation, nitration, reduction, condensation, etc., and they are made with very strong chemicals, concentrated acids, oleum, chlorine, caustic soda, etc., and often at high temperature or under pressure. The nature of these chemicals and the conditions under which they are made to react require special plant, capable of withstanding the action of those chemicals or temperature or pressure.

The aniline plant is one of the most important plants; here benzol is first nitrated in very large open pans, cooled from outside with so-called mixed acids (a mixture of sulfuric acid and nitric acid). When the reaction is complete the product—nitrobenzene—is separated from the waste acid, washed, and then reduced to aniline. After reduction the aniline is distilled with steam, separated, and distilled in large vacuum stills.

Dyestuffs are made from intermediates in the azo factories. Azo colors, which comprise mostly direct colors and many acid colors, all contain the chromophore group—N—N—. These are produced by treating an amino compound with nitrite and hydrochloric acid and then coupling with phenol, naphthol, B-oxynaphthoic acid, etc.

Dye Names

The question of dyestuff nomenclature must be quite a puzzle to some color users. To a chemist the chemical name of the dyestuff would convey most information, but it would hardly be possible to use such names as aminoazobenzene and anthrarufinoldisulfonic acid. The color user is not particularly interested in the chemical composition and would far rather talk about acid red, direct blues, etc., according to their dyeing properties, and so this is the method adopted by the color manufacturer.

Dyestuffs are usually classified according to their behaviour towards the various fibres, so we have acid dyestuffs which have a direct affinity for wool, basic colors which dye wool or tannic mordanted cotton, substantive colors for direct cotton dyeing, mordant dyes which have no direct affinity for fibres and dye fibres which are first treated with metallic salts; vat dyes which are insoluble in water but which, on reduction, are converted into leuco compounds. Leuco compounds dye the fibre and are easily reconverted into the dyestuff by oxidation either in the air or by weak oxidizing agents. In addition, we have the developed colors or ice colors which are actual dyestuffs produced on the fibre. In this case the fibre is padded with an intermediate and the dyestuff produced by diazotizing and coupling.

It is necessary to distinguish between a hundred or so types which have similar dyeing properties, and the general way is to use letters which theoretically should mean something, for example, Alizarine Sapphire Blue SE—the "SE" means "säure echte," the German for fast to perspiration. Direct Sky Blue GS—the "GS" means green shade—and so 2B would be bluer than B and 8B would be considerably bluer, for example, Kiton Violet 12B is practically a blue.

Dye Families

Colors with similar dyeing properties are usually given a class name, for instance, Kiton acid colors are level dyeing acid colors. A Kiton fast color would be an acid color fast to light. Where a color is manufactured specially or mixed and shaded to a firm's special requirements, then it is very often followed by the initial letters of the consuming firm, for example, Acid Black JS would mean Acid Black supplied to John Smith. A Yorkshire firm once brought out a sulfur black with the initials "KO," and let it be generally understood that these initials meant "knock out." This product had a very good sale until a rival firm brought out a sulfur black "BKO" (evidently of a bluer shade).

We now come to the general organization of a color works. There is the commercial side and the technical side, and, in addition, the dyehouse laboratory which is part technical and part commercial. The commercial side is concerned in asking the technical side to prepare certain colors and to distribute those colors as they are prepared. The technical side is concerned with the manufacture of all the various colors the commercial side can sell, or think they can sell, together with an economical disposal of by-products. So many colors are very closely related: it is not possible to make one ton of Oxyphenine Yellow 2G without making a similar quantity of Primuline, so, if the commercial side only require Oxyphenine, the technical side must point out to the commercial side they must also sell an equal quantity of Primuline. If an intermediate has to be made specially for a certain color you can quite understand that all the colors that the intermediate gives rise to can be manufactured.

All dyestuffs when isolated, except in special cases when they are sold in the form of so-called pastes, have to be dried, milled, and standardized. The drying is either done in vacuum stoves, hot air chambers and canals, or even spray drying is adopted. Milling is done in special mills of the "disintegrator" type or in "ball mills." The color requires to be very carefully watched in grinding; with some products at a certain stage the particles conglomerate and form small balls, which give the appearance of unground color. The heat produced in grinding adversely affects some products; in such a case the mill is run

for a certain time, stopped, and allowed to cool and run again. Some mills can take 4000 lb.—5000 lb. weight of color, others can take from 50 lb.—2000 lb. The diluent which is added for standardizing purposes is often quite helpful in the grinding.

A number of dye tests are required to be made at all stages from the color in the paste form to the finished type product. When a large batch is being ground, samples are required to be taken from various parts of the mill. The manufacture of some dyestuffs is very much like baking a cake, no two batches are quite identical, very slight variation in purity of the intermediates or in the times and temperatures of the various operations cause slight differences. The whole of the batch which may be off-shade may have to be put on one side as factory stock until a similar sized batch which varies in the other direction comes along in order to correct it. Products are standardized either as type or as concentrated, according to the requirements of the sales department, and according to the stock which is usually kept.

Dye "Salting"

Standardization is done by grinding with a diluent such as salt, anhydrous Glauber salt, or dextrine. This is done so that regular deliveries may be made to customers, so that a delivery made today and a delivery made a year hence will be identical in strength, shade, and dyeing properties. The types and concentrated strengths are fixed by the requirements of the color user. The type strength of Rhodamine has been fixed as one-fifth the strength of a batch product so it is possible to buy Rhodamine 100%, that is to say, type, or Rhodamine 500% strong. This is a powerful color, and by using the type strength the dye user could weigh out in ounces, whereas if he was using the concentrated color he would have to take very minute quantities, portions of a gramme, so you can readily imagine it is very much easier for him to work with the weaker product. I am stressing this point because many color users imagine the addition of salt or dextrine is made to a dyestuff only to cheapen it, and it is this addition which makes the color manufacturers' profit.

If color users understand this part of color-making they would understand the variations they complain of. We, as dye manufacturers, make it our business to study the application of dyestuffs to the various industries and I am afraid the reverse cannot be said, that is to say, the color users, in my experience, do not understand the difficulties of dye making. We make more than 100 tons of dyestuff every week, these dyestuffs comprise dozens of types. The products are distributed to about forty different industries. We supply the textile industry, paper, leather, foodstuff, fur, synthetic resin, boot polish, printing ink, and many other trades. One color may be confined to one particular industry, for example, Chrome Blacks are confined to the woollen industry and so they are standardized on wool. Substantive colors are mostly used on cotton, so they are standardized on cotton yarn or cotton piece, that is to say, when a pure batch is made, a sample from the batch is dyed in the laboratory against standard both for strength and shade; instructions are then issued to the works to mill this batch with so much salt, or instructions may be given to shade it with a small percentage of another color; if the batch is dull and red, a small percentage of a bright green would correct it. Or, again, the factory stock is examined and a brighter batch than usual is used for shading and mixing with the dull shade dyestuff. Products like Nigrosine, Citronine, and Resorcine Brown are tested out on vegetable tanned leather. Many of the direct cotton dyestuffs are tested out on chrome leather, but there is always this danger, the leather industry may be using a color of which only a small percentage is absorbed by the leather industry, the remainder going to the textile industry. The dyestuff may be tested on wool and passed and may be absolutely correct, but, again, if it is applied to leather there may be present some uncoupled intermediate which has the property of staining leather, and it may be found to be entirely wrong for the leather industry.

There was an instance of a color—Kiton Fast Green A. When this was first made it was generally used for dyeing wool. It was tested out on leather, found to give a good green, and was adopted in the leather industry. In the course of time research chemists found a method of improving the manufacture, that is to say, from an economical point of view, certain processes were shortened and different intermediates used, but the product was still of the same chemical constitution, and on wool gave exactly the same shade as formerly, but when it was sent out to a leather customer it threw an entirely different shade, and, in shading or mixing, to correct this color it was found necessary to make small quantities by the old process to please a very irate customer.

Chemical Dyeing

It is quite possible to consider dyeing as a chemical combination, and if you have a colored solution of an acid dyestuff and boil in this a piece of wool, the color will come out of the solution on to the fibre and leave practically a colorless solution. If there are impurities in the dyestuff or uncoupled intermediates these will all remain behind. If that same dyestuff was used not for dyeing wool, but used, say, in a synthetic resin where there is no chemical combination, these impurities would all go into the material and affect the color. So it behooves the dyestuff manufacturer to ascertain how and where each product is going to be used and to see that a satisfactory product is provided. We have had a recent experience of making a color too well, the Research Department was able to make suggestions and the solubility of a yellow dyestuff was

greatly improved. This was quite an asset to the manufacturers of custard powders, wool dyers and paper manufacturers, but when the color came to be used for paper staining it was reported to be very weak. A firm of paper stainers was mixing a yellow with a blue to make a green, it happened that the yellow was so soluble that it remained in solution, whereas the blue was quickly absorbed. As the blue predominated in the green, the yellow was reported to be exceedingly weak. So, again, we had to find some of the old manufacture to give the apparent strength for this particular industry.

Looks vs Performance

Another very sore point with color users is the question of physical appearance; they cannot understand how a reddish-looking powder will dye the same as, say, a greenish-looking powder. Physical appearance is partly governed by the length of time of milling, and this, as you can imagine, varies according to the length of time to get the product right. During the milling of a type, dyestuff samples are taken and sent to the dyehouse for testing, additions are required, and further additions may be required until the product passes the requisite tests, so the same dyestuffs on one occasion may be milled for one hour, another again for three hours, and perhaps on another for ten hours.

The fastness question intimately concerns the dyehouse laboratory, and all products are being continually tested for their fastness to light, washing, milling, and perspiration. The tests are carried out as a routine matter on general colors and in addition combinations are always being tested in order that suitable recommendations can be made. For example, in dyeing felt hoods it is necessary to have a combination of a red, yellow, and blue of equal levelling properties, that is to say, they must dye evenly and approximately at the same rate. It would not do to have a yellow going on first followed by the blue then the red. They must also be similar in fastness to light, or if they fade they must fade in a balanced manner; for example, if the yellow fades red, the red must fade on to the orange side. If the blue fades violet then the yellow and the red must fade on the green side. Fading after all is more often a change of shade than actual destruction of color, although both are possible. With indigo you have a perfect dyestuff as regards fading. Many people think that indigo is fast, but it is not fast, exposure to light simply destroys the color and the products of destruction have no color, so you get a heavy shade of indigo gradually turning into light blue but always keeping its tone.

Unfortunately, very few other dyestuffs possess this very convenient property. This fastness problem is becoming more and more involved and our researches are always aiming at producing faster dyestuffs. The introduction of the anthraquinone and indigoid types of dyestuffs for fabrics resulted in the growth of the guaranteed dye mark in textile materials.

The general public, not understanding dye making or dye using, cannot see why every colored article cannot be guaranteed, that is to say, if the color does not last the life of the article they want it replaced by a new article. In other words, they know that fast dyes are to be had and they cannot see why they are not to be had on every occasion and for every purpose. Why they cannot have them is due to their higher cost. It is quite possible for material to be dyed with a vat dyestuff and the vat dyestuff to cost almost as much as the material, whereas if it was dyed with an ordinary dyestuff the cost of the dyestuff would only be a small percentage of the material. Again the vat dyestuffs are very difficult to apply, they are themselves actually insoluble. They have to be dyed as leuco compounds, and for dyeing them level on yarns and piece goods, very complicated machinery is necessary. This explains why when made up curtains are sent to the dyer and cleaner for a change of shade, they cannot be dyed in the same manner as they were when they were new and sold as guaranteed. Leuco compounds are usually different in color from the finished shade, consequently, there is a very great difficulty in matching the vat colors.

Leather Fastness

The question of light fastness on leather goods, too, is extremely difficult because here you have a substance which even undyed, changes considerably under the action of light. Vegetable tanned leather turns a dark brown if a fugitive dye is used on this; as the leather substance darkens the brown dye lightens, so you get the peculiar idea prevalent that a fugitive dye like Bismarck Brown is fast on leather. If a leather manufacturer requires colors for garment leathers and requires them fast, then he must see that his tannage is so arranged that his leather before dyeing is fast to light.

One interesting application is the use of dyes in foodstuffs. For this particular trade we have to take special precautions to see that poisonous metals are kept out of the dyestuff. We are only allowed half a part per million of arsenic and twenty parts per million of lead, zinc, and other metals, so we have to take special precautions to use acids absolutely free from arsenic. Instead of using lead coils we use silver coils; the recent drop in silver has been a very great help to the industry in making possible the abolishment of the use of the lead coil in certain cases. The addition of colors to food is not necessarily a malpractice; take meat pastes and fish pastes, if they were placed on the market without the addition of color they would be so anaemic looking that they would be unappetizing. The last year or so has seen a wonderful growth in British canning, the color provided by Nature for coloring the strawberries, rasp-

berries, cherries, and peas is not fast to canning, and although canned strawberries, raspberries, and so on are perfectly good to eat, they certainly do not look so good to eat when decolorized, so the color manufacturer comes along and provides suitable dyestuffs to give the ordinary coloring. In the early days of canning peas, copper sulfate, a very poisonous chemical, was used in order to give them a green color, but when this was prohibited by law the color manufacturer had to find a suitable color. In these days of production and mass distribution of foodstuffs, nobody believes that eggs are generally used in mass-produced cakes for example, along comes the very handy tartrazine and you can, if required, give an appearance of even the number of eggs specified in Mrs. Beaton's famous book.

No Poison Labels

There seems to be a peculiar idea prevalent that dyes are poisonous, but I find it very difficult to understand this unless it is that people know they are products of the organic chemical factory. Very few commercial dyes are toxic and there is absolutely no difficulty at all about making dyestuffs edible. Again, in certain respects, there is very little difference between dyestuffs and pharmaceutical products; their manufacturing chemistry is the same. Perkin when he discovered mauvein attempted to make quinine, a drug, so it comes about that manufacturing pharmaceutical products is undertaken by many dyestuff manufacturers.

If there is very little business in the way of dyestuffs and drugs, the dyestuff manufacturer need not shut down his plant because there are still other industries which require organic chemicals for which he can use his plant. The rubber industry requires products for accelerating vulcanization and also for increasing the ageing properties of rubber goods; again, he can turn his attention to the wide field of synthetic resin manufacture, a new industry known under the term "Plastics," which comprises condensation products, phenol and formaldehyde, aniline and formaldehyde, urea and formaldehyde, or thio-urea and formaldehyde. The price of dyestuffs today is far too low, and I do not say this because the prices of raw materials have advanced owing to the change in currency. This has happened and raw materials are more costly, but even then the price of dyestuffs is far too low.

It takes one month to make a batch of Sky Blue. Direct Black has nineteen separate chemical processes in its manufacture. In England, under conditions which I will explain, we are actually selling dyestuffs practically at the material cost; many of them are lower in this country than in any country of the world, and it is not in the interest of color users that dyestuffs should be sold at material cost or only bearing a small margin of profit. In the dyestuff industry more than any other industry the consumer relies on the inventive capacity of his supplier. Dyestuffs sold at material cost mean that no money can be set aside for systematic and general research. No research means no new dyestuffs and no improvement of present dyestuffs. We can never have any pride in a British organic chemical industry if there is not a steady flow of new products. Apart from research, technical services have to be paid for. When a pattern card is issued to the leather industry, nothing of very great pretentions can be issued under about £2 per copy. I personally think it was a very wrong thing of the dyestuff makers, twelve months ago, to make an offer to accept world prices. How can the color maker in this country guarantee to compete with world prices when he is paying more than double for some of his principal raw materials. I have already referred to the fact that we, in this country, are bound to pay the price of motor spirit for benzol; imagine the situation in America, where you have gasoline at less than 2d. per gallon. The American benzol producer has to go "cap in hand" to the dyestuff manufacturer to dispose of his supplies, and I am afraid he would look very sick if he was offered the price of gasoline for it.

(The author is in error here, for while the price of gasoline in the United States is lower than in Great Britain, nevertheless the motor fuel blenders are the chief users and our supplies of benzol are moreover chiefly from coke ovens a less regular source than the gas plants.—Editor.)

Equipment Bulletins

Bethlehem Foundry & Machine Co., Bethlehem, Pa. A completely revised loose-leaf booklet describing the complete line of Bethlehem standard processing vessels, thermocoil apparatus, accessories, materials of construction and roasters. Should be in the library of every engineer and operating official.

Croll-Reynolds Engineering, 17 John St., N. Y. City. An 8-page booklet describing the FlexoDisc alloy steel expansion joint suitable for handling expansion in steam mains, miscellaneous piping and for special expansion problems.

General Electric, Schenectady. GEA 1583 is a 4-page leaflet describing new improvements made in relays.

The Linde Air Products, 30 E 42 St., N. Y. City. "Oxy-Acetylene Tips" for July features an article on profitable welding in the automotive industry.

Thompson Continuous Filter Press Co., Seattle, Wash. A 4-page leaflet describing the new and revolutionary Thompson Continuous Filter.

Surface Combustion, Toledo. A 4-page leaflet describing the SC cast alloy conveyor hardening furnaces. Profusely illustrated.

Whiting Corp., Harvey, Ill. A 68-page booklet describing the complete line of Whiting overhead cranes for handling products at low cost.

Swiss exports of coal tar dyes (except indigo) in 1931 were higher than during 1930. Shipments of all coal tar dyes (except indigo) in 1931 totaled 6,928,728 kilos, worth 67,456,662 francs, while in 1930 they reached a quantity of 6,744,134 kilos and a value of 66,951,087 francs.

Exports of indigo and indigo solution were 1,468,303 kilos worth 3,695,640 francs in 1931 and 1,436,505 kilos at the higher value of 3,915,078 francs. (Value of franc in 1930 and 1931 equalled $0.193).

New Products and Processes

Rayon Weighting

Specification 372,129, British Celanese, Ltd. describes a process for raising the safe ironing point of materials manufactured from cellulose esters or ethers. Any suitable weighting metals may be used; such as, salts of tin, zinc, aluminum, bismuth, tungsten, or antimony. Very satisfactory results are achieved by the use of tin salts, particularly stannic chloride. The latter may be applied in the form of an aqueous solution of from 1 to 10 per cent concentration; concentrations between 2 and 6 per cent being particularly useful. Temperatures of from 50 to 90 °C. may be employed in the process.

It has been found that by weighting cellulose ester or ether materials in the presence of substances which repress swelling of the goods by aqueous solutions, a very substantial raising of the temperature at which they may be safely ironed can be secured. For instance, the safe ironing point may be raised by this method from about 220° to 250 °C., or even to 300 or 320 °C.

Sulfonated Oil Substitute

In certain cases to replace sulfonated oils in making "soluble-oils," ammonium linoleate is now being used. When these "soluble-oils" are stirred into water they give milky emulsions which find use as polishes, lubricants, textile softeners, agricultural sprays, cutting oils, etc.

The method is quite simple: Dissolve 15 parts of pure oil in 10 parts of ammonium linoleate and then stir in 5 parts of water. Up to 70 parts of mineral oil is now stirred into a clear "soluble-oil."

Moth-Proofing Soap

A novel idea for preserving wool materials against attack by moth is contained in E. P. 366,090 and consists of using a soap in washing processes which contains suitable moth-proofing substances. In this manner a fresh supply of moth-proofing agent is incorporated with the fabric or garment at each wash, this being in marked contrast to the practice now current of washing such that moth-proofing agents previously incorporated in the fabric are largely removed and their values consequently lost. The moth-proofing agents preferred include the quaternary phosphonium bases of the type described in E. P. 312,163, or soluble salts of selenic acid, or derivatives of hydrofluoric or hydrofluosilicic acid. The following is an example of a satisfactory moth-proofing soap:

Soap	90 parts
Tri-phenyldichlorobenzyl-phosphonium chloride	10 parts

Insecticides and Disinfectants

U. S. Patent 1,842,983, issued to Karl Marx and Hans Wesche, of Dessau in Anheim, Germany, and assigned to Winthrop Chemical Co. of New York, N. Y., as a new type of insecticide for household use, is an invention based on the observation that the ethers derived from tetrahydronaphthol and the derivatives and substitution products of these ethers are extraordinarily active insecticides. Individual insecticides according to this invention are, for example, ar-α-tetrahydronaphtholmethyl ether, ar-α-tetrahydronaphtholethyl ether, ar-β-tetrahydronaphtholmethyl ether and ar-β-tetrahydronaphtholethyl ether. They may be used without being mixed with other insecticides or in admixture with synthetic or natural insecticides, for example pyrethrum, or with extracts of such natural insecticides, with diluents or with vehicles. They may be applied in any desired manner, as dusting powders or by spraying in form of a solution or emulsion. By addition of viscous oils, for example paraffine oil, the finely sprayed preparation remains for a long time suspended in the air.

Example 1.—1-2 ccm. ar-β-tetrahydronaphtholmethyl ether are sprayed per 1 cbm. of a room infected by flies and is sufficient to kill all the flies in a very short time.

Example 2.—5 parts of ar-α-tetrahydronaphtholethyl ether are dissolved in 5 parts of butyl alcohol. 15 parts of an emulsifying agent are added, for instance a solution of 50 per cent strength of the sodium salt of dibutylnaphthalene sulfonic acid. The mixture is then diluted to 100 parts with water. A solution of 2 per cent strength of this stock preparation yields an excellent spraying agent.

Recent experiments in the laboratories of the Chemische Fabrik Gedeon Richter A.-G. of Budapest, show that it is possible to make cresol derivatives completely odorless without in any way lowering their bactericidal and insecticidal powers, by dissolving them in alcohol and gelatinizing the solution with sodium stearate. According to one example of the process, a solution is made in 70 kilogs of alcohol, of 6 kilogs of stearic acid, and 5 kilogs of parachlor-metacresol; a second solution is made by dissolving 0.87 kilogs of 98 per cent sodium hydroxide in 10 kilogs of alcohol. The two solutions are mixed while warm, the solution poured into moulds. On cooling the solution solidifies into a transparent solid mass which is easily soluble in water.

Metallurgy

To improve the composition of slag, a process has been found producing simultaneously iron and Portland cement or hydraulic lime; sufficient lime and, if necessary, other ingredients, such as silica or alumina, being added to the ore to give the slag the desired composition. The charge is ground to a fine powder and introduced into a rotary furnace which is heated by the combustion of pulverized fuel with the proportion of air required to obtain a carbon monoxide content of the furnace gases sufficient to prevent reoxidation of the metal and without fusion of the charge. The products leaving the furnace are cooled in a cooler, crushed, and the iron, etc., removed by a magnetic separator. The metal may then be melted in an electric or open hearth furnace or in a rotary similar to that in which the reduction is carried out. Spec. 368,312, of L. P. Basset, Paris.

Tanning

Recent research at the University of Cincinnati developed a method by which acetic acid may be profitably used in the pickling of hides, by adding a small amount of acid to the usual salt and sulfuric acid pickling liquor. This has been found to keep the skins free from mold for about two months, when otherwise mold forms in ten days or less. Another treatment not yet in commercial operation is made by using a yellow dyestuff powder, paranitrophenol. Observations at the laboratory show that skins never show mold after being pickled in this solution.

A better way of curing raw hides and skins has been discovered by chemists of the Bengal Tanning Institute in Bengal, who have found that mixtures of sodium sulfate and sodium chloride cure the hides satisfactorily, and do not give curers the opportunity of adulterating with mud and dirt, as is practiced when khari salt is used for curing.

Chemical Facts and Figures

Imperial Conference at Ottawa Discusses Chemicals — Nitrogen Cartel Revived — I. C. I. Rules on Package Fertilizer Rates — Du Pont Adopts Trade Acceptance Plan — Sicilian Consortium Dissolved — William J. Robertson Dies

American chemical interests watched the British Imperial Conference at Ottawa closely endeavoring to find out just what effect the results of the deliberations will have on our future export trade, particularly with Canada.

It is reported that England's goal is a reduction of at least 10 per cent in the chemical exports of the U. S. into Canada and a similar gain in England's exports to the Dominion. This would mean doubling Great Britain's chemical exports to Canada and a loss of from two to three million dollars to this country. Great Britain's exports in 1931 compare with ours as follows:

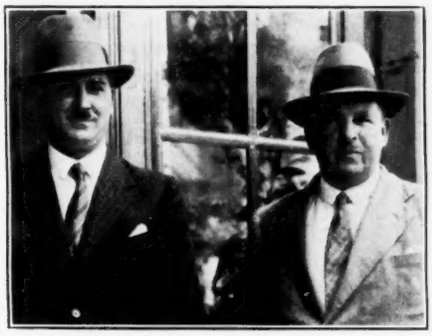
Product	*States*	*Britain*
Acids	$527,000	$265,000
Cellulose	216,000	55,000
Disinfectants	495,000	84,000
Dry medicines	886,000	530,000
Liquid medicines	176,000	93,000
Aniline-tar dyes	907,000	133,000
Explosives	286,000	31,000
Fertilizers	2,019,000	25,000
Oxides	552,000	165,000
Zinc oxide	402,000	125,000
Soap	705,000	105,000
Cosmetics	639,000	191,000

The chemical industry, it is expected, will not be as severely affected by any agreements made at Ottawa as some of our other large industries, steel for example. Nevertheless, American chemical producers are apprehensively awaiting the final outcome of the meeting.

British Guests

The British chemical industry is being represented at the Conference by Dr. E. F. Armstrong, chairman, and Capt. J. Davidson Pratt, general manager and secretary, of the Association of British Chemical Manufacturers. Dr. Armstrong and Captain Pratt arrived in New York on July 9 on the Mauretania and were guests of honor at several luncheons, including one given by Williams Haynes, editor and publisher of CHEMICAL MARKETS, at the Chemists' Club on July 15 and attended by a number of the leading executives in the industry. They then spent two days in Washington conferring with government officials. The distinguished guests were entertained by representatives of the various trade associations with Warren N. Watson, secretary of the Manufacturing Chemists' Association in charge and by C. C. Concannon, chief of the chemical division of the Dept. of Commerce.

At both of the Washington luncheons the British representatives outlined the British position at the Ottawa conference. The problem from the chemical industry standpoint, they stated, is to evolve



Capt. J. Davidson Pratt, left, and Dr. C. F. Armstrong, who are representing English chemical industry at the Imperial Conference at Ottawa

tariffs in each Dominion of the Empire that will permit the local manufacture of products that can be made there efficiently but preventing fostering inefficient industry where the products may be brought in British Empire.

In the Chemical Age (London, July 16) appeared a summary of the British chemical industry's attitude towards the conference. "The main objective is the acceptance of a policy of economic co-operation which, by means of a system of preferences, will promote and increase trade between the various parts of the Empire. At the present time there is a large volume of trade which might well be kept inside the Empire to the advantage of all its component parts. At the present time, Great Britain secures only about 40 per cent of the total importation of chemicals into other parts of the Empire, leaving a balance of some £23,000,000 (1928 figures) which is imported from foreign countries and of which a large part might be secured for Great Britain by an adequate system of preferences."

The British Empire is the best customer for U. S. chemicals and allied products. Our chemical exports to the British Empire have accounted for 40 per cent or more of our total chemical exports for a long period of years. Even in 1931 the total reached $59,000,000. The United Kingdom and Canada alone have accounted for over 30 per cent of the U. S. chemical exports. Until 1928 the Mother Country was the larger of the two, but since then Canada has assumed first place. In 1931 our chemical exports to Canada amounted to $24,452,000 and to the United Kingdom $21,722,000.

Canadian Plants

A number of American chemical producers are in a position of advantage, in the event the present proposed plan is consummated, with factories already established in Canada, in many instances controlled by Canadian incorporated companies. Chemical companies owning plants include American Cyanamid, du Pont (through a half ownership in Canadian Industries, Ltd., the other half controlled by the I. C. I.) Merck and Mallinckrodt. Just what the viewpoint of the conference will be towards these plants has not as yet been disclosed. A great deal of bargaining is expected and the final results hinge on a great number of factors. Over 8,000 items are included in the "bargaining list".

Proposals somewhat similar to those now under discussion were made at the last Imperial Conference held in London three years ago. The conference failed then, largely because Great Britain was a free-trade country with no chance to barter for favors. Since then Great Britain has embraced protection in a large way and is now in a position to offer preferential rates to the Dominions in return for increased trade opportunities.

Nitrogen Cartel

Synthetic and natural nitrate producers are again in agreement. The nitrogen cartel, abandoned last August, has been revived in spite of numerous difficulties. The pact is said to lack only the formal agreement of the Chilean government. This is confidently expected as representatives of the Davila regime were present at the final conferences. A long series of meetings have been held during the past two months and from time to time reports have been received that the negotiations had failed for one reason or another.

According to the earlier reports, the synthetic producers were offering the natural nitrate interests an export quota of 130,000 tons of nitrogen (800,000 tons

of nitrate). It is said that the Chilean government rejected this offer, demanding at least 1,200,000 tons of nitrate and at least 60 per cent of the French import market. Since the adoption of the new import quotasystem last year, Chilean nitrate has shared but a very small part of the French requirements. A large part of the former Chilean tonnage was given to the German I. G. Under an arrangement made early this year. It is, at the moment, impossible to determine just how far the synthetic producers agreed to meet the natural producer's demands.

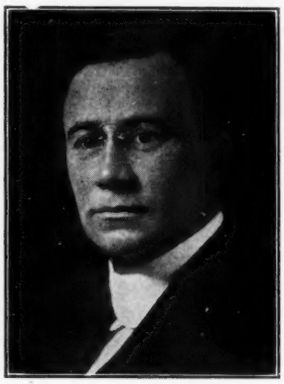
Nitrate Stocks

The total Chilean nitrate exports in recent years have amounted to over 2,000,000 tons annually, but last year the total tonnage amounted to but 1,315,000 tons. Stocks on hand at the end of 1931 were reported to be 2,737,000 tons and the Chilean government has held this surplus as a threat over the synthetic producers. Synthetic producers have feared that, a large part of these accumulated stocks would be dumped on the market for whatever they would bring. Chilean finances are in such a chaotic condition that the greatest need has been that of ready cash to carry on the functions of the government. With no profits from the Cosach to draw upon and with the former export tax relinquished, the Chilean government has been seriously embarrassed financially and this and the problem of unemployment aggrevated by the adoption of the Guggenheim process in place of the Shanks process are the two reasons largely responsible for the political unrest in Chile. Reserve stocks in Chile, while unduly large under the present conditions are only slightly higher than one year's normal demand. Nitrate does not deteriorate and money may be borrowed on such stocks. On the other hand, embargo against all imports was obviously a trump card in the hands of the European producers. It is very likely that this latter fact has contributed largely to the maintenance of prices.

Protest

The announcement of the formation of the cartel brought forth a bitter attack by President Francis P. Garvan of the Chemical Foundation, who charged that the international trust was a military alliance directed against the efficiency of our national defense and the protection of our agriculture.

"Where are the leaders in public office, public press, education or business life who are not cursed with the acceptance of bribes or sentimental internationalism?" asks Mr. Garvan in his statement. This world nitrogen cartel is a threat to our hard-fought war for independence. American plants are not allowed by law to combine with one another. Such is the proper theory of our government. Each plant must stand on its own, facing this world cartel. It is up to the U. S. Government to protect the smallest of these plants



Pres. Francis P. Garvan
Chemical Foundation head sees a real danger to American chemical industry in new cartel

from dumping and other unfair practices which will necessarily follow this combine.

"Was this combine part of the 'gentleman's agreement' in the cancellation of the debt program? Is it but one more evidence of the combinations in Europe which threaten us? The most disturbing thought of all is the knowledge that our international bankers loaned to the constituent members of this cartel some $150,000,000 of their American depositors' money."

Financial Reorganization

Word was received on July 29 that M. G. B. Whelpley, Cosach president, was ready to return to New York from London where he has been engaged for several weeks evolving a plan for the reorganization of the financial structure of the Cosach. Discussions are scheduled to take place between Mr. Whelpley and the American protective committee, after which, it is expected, he will go to Chile to place the plan before the Chilean government. The big difficulty has been the reduction of the heavy fixed charges which amount to over $200,000,000. Details of the suggested plan, as formulated at the London conferences, have not as yet been disclosed. As the month ended the conference of the newly formed international cartel was resumed at Schveningen, Holland. Several members are said to be still dissatisfied with quotas allotted and efforts will be made to straighten out these details. The provisional agreement signed on July 20 proposes to regulate tonnages and prices of ammonium sulfate as well as nitrate. Including sulfate in the agreement had the effect of strengthening prices both here and abroad. Because of conditions, it is expected that the naming of nitrate prices for the coming fertilizer year will be delayed.

COMING EVENTS

American Bottlers of Carbonated Beverages, Cleveland, Nov. 14-18.

American Chemical Society, meeting, Denver, August 22-26.

Electrochemical Society, Cleveland, Sept. 22-24, Hotel Cleveland.

Salesmen's Association Golf Meeting, Aug. 9, Greenmeadow Country Club, Harrison, N. Y.

Technical Association Pulp & Paper Industry, Holyoke, Mass. Sept. 14-16.

Tenth Exposition, Power & Mechanical Engineering, Grand Central Palace, Dec. 5-10.

Obituaries

William J. Robertson, 60, president, Heller & Merz (now an American Cyanamid subsidiary) died suddenly July 23. He entered the employ of Heller & Merz

William J. Robertson

on March 18, 1895 and continued with this company until ill-health forced his temporary retirement in 1922. Returning the following year, he was placed in charge of sales and remained in this capacity until the merger with Calco in 1930 when he was elected a vice-president. In April of this year he succeeded Eugene Merz as president. Known affectionately by his associates as "Robby" his passing is a severe loss to the dyestuffs industry. He is survived by a son, William O. Robertson, and a daughter, Mrs. Helen O'Brien.

Sydney Thayer, Sr.

Sydney Thayer, Sr., 64, a director and secretary and treasurer of Bower Chemical, Philadelphia, died July 9 of a heart ailment. Mr. Thayer was a member of an old Philadelphia family and prominent for many years in the chemical industry. He was formerly a director of Mutual Chemical and Penn. Salt, resigning because of ill health three years ago. He was a graduate of U. of P., class of '86, and was a member of the Art Alliance and Union League, both of Philadelphia; the

University Club, N. Y., and the Sons of the Revolution. He is survived by his wife, Mrs. Elise Bower Thayer; a daughter, Mrs. Philip B. Fisher; and a son, Sydney Thayer, Jr.

Dr. Louis J. Matos

Dr. Louis Joseph Matos, 69, chemical engineer and former chief chemist for National Aniline, died July 9 at his home in East Orange, N. J. Dr. Matos was a specialist in the manufacture of textile dyes and during the World War was active in perfecting American-made dyes for the textile industry.

Dr. Matos was educated at the Episcopal Academy, Philadelphia, and the U. of P., and studied advanced chemistry, especially the manufacture of textile dyes, in Germany. After completing his studies he became chief chemist for the John & James Dobson Carpet Mills, Philadelphia. About thirty years ago he became chief chemist for the Cassella Color and National Aniline.

He was a member of a number of scientific societies and for a number of years was active in the Masonic fraternity as a member of Hope Lodge, F. & A. M.; Orange Chapter, R. A. M., and the Jersey Commandery, Knights Templar.

Philip Hayes, 53, chief engineer at the Solvay's plant at Tully, N. Y., died July 14. He had been connected with the company for thirty-two years.

William G. Meiners, 60 secretary-treasurer, Kentucky Chemical and a director of the Model Laundry Co., died in Cincinnati, July 6, of a heart attack.

Gabriel M. Andreoli, 65, chief chemist International Paint Corp., Union, N. J. died July 19 at his home in Roselle, N J., after a long illness. Mr. Andreoli was born in Paris. He was educated at London University, and was employed for several years as a chemist at the DeBeers diamond mines in Kimberly, South Africa, and later at the Rand gold mines in the Transvaal. He served with the British during the Boer War, and during the World War perfected a coating for airplane wings which has become a standard coating for airplanes and dirigibles. After the World War he became chief chemist for Titanine Products Co., Hendon, England, and in 1919 came to that company's subsidiary at Union, N. J. In 1930 he joined International Compositions Co., now named the International Paint Corp.

E. C. Hutchinson, secretary and treasurer of Trenton Bone Fertilizer, Trenton, N. J., died June 25 at his home in that city. Mr. Hutchinson was one of the incorporators and a director for three years of the N. F. A. In addition to his activities in the fertilizer industry he was also prominent in civic and political circles in New Jersey.

Dr. George K. Burgess

Dr. George K. Burgess, 57, director since 1923 of the Bureau of Standards, died July 2. Dr. Burgess was born in Newton, Mass. He had been connected with the bureau for 29 years, becoming associated with it as assistant physicist two years after the bureau was established and rising steadily to the directorship.

Robert S. Perry, 67, well-known chemical and metallurgical engineer, and one of the founders of the Educational Bureau of the Paint and Varnish Industry, died July 13 at his home in Cave Springs, Ga.

Washington

With Congress adjourned interest in Washington turned to the practical application of the several legislative acts designed to speed business recovery. Business was Congress weary and welcome the opportunity of turning full attention to personal problems, freed from the worry of what may or may not occur in Washington.

Service Charges

Considerable controversy has taken place over the provision of the new economy act requiring the Dept. of Commerce to charge for its services and publications. The Department heads are facing the difficult problem of making up a list of these charges and the problem is a difficult one to find the proper solution. Opposition has come mainly from small business men who are opposed to any charge. While the new law may prove to be temporarily unpopular, it may serve, it is thought in many quarters, to increase the importance of the department in the eyes of business leaders.

Provisions of the new excise law designed to increase the government's revenue are causing some confusion as to what products are or are not rightfully included in the taxable list. The Manufacturing Chemists' Association requested during the month a ruling exempting "industrial benzol." Other chemical materials are on the border line and special rulings will have to be made in many cases.

Package Freight Rates

The I. C. C. has found to be "not justified" the proposal of railroads to revise classification ratings on manufactured fertilizer, other than in bulk or bulk packages in carload or less-than-carload lots shipped throughout the United States.

The schedules proposing this revision were ordered cancelled without prejudice to the filing of new tariffs in conformity with the findings in the commission's report.

The proposed schedules were intended to establish carload rates for package fertilizer lower than the present any-quantity rates but higher than the carload rates of bulk fertilizer. Another objective of the proposed revision was to provide that when bags are used as inner containers for package fertilizer, the "bulk" or the "package" ratings would apply according as the bags contain more or less than 25 pounds of fertilizer.

The report also concluded that rates and ratings on manufactured fertilizer throughout the United States other than in bulk or bulk packages, in carloads, less-than-carloads, or mixed carloads, were not unreasonable in the past but will be unreasonable for future application. A basis of reasonable rates was prescribed for future application. The nature of the findings, however, precludes awards of reparations for alleged excessive rates charged in the past.

The decision has an important bearing upon the marketing of fertilizer in smaller packages which producers have sought to develop among urban or suburban dwellers.

The commission concluded that not only may package fertilizer be lawfully made to bear higher rates than bulk fertilizer, but also that rates on package fertilizer need bear no fixed relation to those on bulk fertilizer.

Sulfonated Oil Standards

The Bureau of Standards issued during the month a recommended commercial standard covering the grading of sulfonated oils and is requesting producers, jobbers, and users to signify approval or disapproval of these recommendations. Copies of the recommendations in its present form are available and can be obtained from the Bureau of Standards, Washington.

The recommendations are the outcome of a meeting held on June 30 at the Hotel New Yorker, in N. Y. City, attended by a large number of manufacturers and presided over by L. R. Gilbert, of the Division of Trade Practices.

Manufacturers Agree

C. P. Gulick, President of National Oil Products also chairman of the newly formed association of sulfonated Oil Manufacturers, representing the manufacturers, outlined what his group considers necessary in a specification covering this product, and explained what the industry hopes to accomplish by the establishment of this standard. Mr. Gulick thought that its general adoption would mean a better understanding between the manufacturer and the user, and would supply a method of grading that will very largely prove satisfactory to all interests.

Ralph Hart read a letter from Dr. Louis A. Olney, chairman of the research committee, American Association of Textile Chemists and Colorists, suggesting that action relative to the adoption of a standard be postponed until the committee

appointed by that Association had had time to develop a specification which might be an improvement over the data that was under consideration at the conference.

The expressed sentiment of the meeting relative to Dr. Olney's suggestion was embodied in the following resolutions. "Due to the fact that every commercial standard provides a standing committee whose duties are to consider all comments, criticisms and suggestions looking toward the revision of a standard; it is the wish of this conference that the specification as revised be adopted and used by the industry until the American Association of Textile Chemists and Colorists or other agency has developed a specification which they wish to present to the standing committee as a possible improvement over the one considered at this conference."

The specification proposed by the preliminary conference was accepted with a few constructive changes, corrections for which have been included in the proposed standard.

Correction

Arthur T. Sawyer of O'Neill, Sealy & Sawyer, attorneys for the Aldur Corp., called attention during the month to a statement appearing in the July issue of CHEMICAL MARKETS as follows: "it is reported that the reason for the Ellis-Foster action was due to the withdrawal of the Aldur Corp., from the manufacture of urea-formaldehyde resins." The news item dealt with the dismissal of the suit of Ellis-Foster's suit against the Aldur Corp.

Mr. Sawyer's statement in part is as follows: "The facts are that when this case in the regular course was reached for trial on the court calender, on June 1, counsel for the Ellis-Foster Co. stated that counsel who expected to try the case was engaged in another trial, whereupon the judge adjourned the case until June 8. On June 8, counsel for Ellis-Foster appeared before the Court and asked to have the suit dismissed without prejudice upon payment of costs by Ellis-Foster Co." He stated further that the Aldur Corp. has no intention of withdrawing from the urea-formaldehyde field.

Upheld

Ethyl Gasoline won its suit in the U. S. Court for the Northern District of Texas against Henry Klibanow, doing business under the name of Ethyl Laboratories.

Decision by Judge William H. Atwell, sustains contention of the Ethyl Gasoline Corp. plaintiff in an equity proceeding, that the corporation is alone entitled to use the trade-mark "Ethyl," of which it is the owners. The defendant is perpetually enjoined from using the name Ethyl Laboratories or "any business name or style in which the word Ethyl or any like word forms a part."

Ethyl Gasoline Corp., is owned jointly by General Motors and Standard of N. J.

Chromium Patents

The U. S. Circuit Court of Appeals upheld on Aug. 3 Dr. Colin G. Fink's claim as the originator of chromium plating, sustaining an infringement decision by Judge Edwin S. Thomas at New Haven, favoring United Chromium, Inc., against International Silver.

The court ruled that Fink, professor of electro-chemistry at Columbia University, was the originator of the chromium process and not the U. S. Bureau of Standards, Eastman Kodak and Westinghouse Electric as was claimed.

New Sulfur Dome

Freeport Texas has acquired a lease on a new sulfur property, with option to develop it. Prospecting operations are now in progress and drilling results on the dome have thus far been favorable according to officials of the company.

E. L. Norton, president, states: "Our commitment to purchase treasury stock of the Cuban-American Manganese Corp. has been completed, involving an expenditure of approximately $700,000, since the first of the year. These funds were paid out of the cash reserves of the company and no outside financing was required. The plant in Cuba has been completed, production has commenced and our first cargo of manganese has been shipped."

Employment

Factory employment and payroll totals in the manufacture of chemicals and related products in the United States declined further during June. The index number of the Bureau of Labor Statistics for employment in these manufacturing operations was 69.3 for June (100= monthly average in 1926), compared with 76.1 for May and 84 for June, 1931.

The bureau's index number for payroll totals in the chemical and related industries was 60.4 for June, compared with 65.5 for May and 83.3 for June, 1931.

Employment

	June 1932	*May 1932*	*June 1931*
Chemicals	83.6	86.1	95.1
Fertilizers	32.5	58.3	44.5
Petroleum refining	64.7	64.8	75.4
Cottonseed oil, cake and meal	23.8	34.7	28.4
Druggists' preparations	70.5	73.3	77.7
Explosives	71.3	75.0	94.7
Paints and varnishes	72.3	73.1	85.6
Rayon	93.4	129.9	154.5
Soap	95.7	94.2	100.1

Payroll Totals

	June 1932	*May 1932*	*June 1931*
Chemicals	61.6	65.6	82.6
Fertilizers	25.1	41.1	44.2
Petroleum refining	59.4	59.8	75.1
Cottonseed oil, cake, and meal	26.4	34.3	31.3
Druggists' preparations	70.6	73.4	86.4
Explosives	45.5	54.3	78.9
Paints and varnishes	61.8	64.4	85.3
Rayon	78.3	110.6	157.7
Soap	90.5	85.4	105.5

Brush Laboratories, 3715 Euclid Ave., Cleveland, are now marketing a large number of chemically pure beryllium compounds.

Personnel

H. M. Olson, formerly district sales manager for Permutit in Pittsburgh assumed duties as special representatives for Ohio Salt at Wadsworth, Ohio, to promote sale of salt for water-softening purposes.

D. W. Robertson appointed general sales engineer, Titanium Pigment, N. Y. City. Mr. Robertson was former metropolitan sales representative for the company.

James B. Keister, San Francisco, named chairman of the board of National Lead of California. He will remain active in the business in an advisory capacity though relieved of managerial duties.

George L. Simonds elected president of the United States Sanitary Specialties Co., Chicago. He succeeds the late H. I. Koppelman.

P. J. Garvey is representing Eagle Picher Lead in the Cleveland territory. He was formerly connected with the Pittsburg office.

Stanley H. Ellis, recently with Barrett and formerly associated with American Potash and Chemical, appointed assistant to J. P. Brinton, Jr., manager of the ammonia division of Hydrocarbon Products.

"Jack" Williams is again covering Brooklyn and Queens for George Chemical. He was formerly with this concern in 1924-1926. In the interim he was with Sonneborn and City Chemical.

Blaw-Knox Co., added A. J. Faraon to its sales staff as sales engineer for welded process equipment.

Hydrogenation

Control of the oil hydrogenation process in the U. S. passed into the hands of the industry, completion of a plan undertaken by the Standard-I. G. Co. in 1930 having been effected at a special meeting of stockholders of the Hydro Patents Co. recently.

Hydro Patents Co. was organized originally by the Standard Oil Co. (New Jersey), the controlling stockholder in Standard-I. G. Co. All oil refining companies of sufficient size to make them potential users of hydrogenation were then offered stock of Hydro Patents, and over 90 per cent of them are reported as having accepted.

Permanent participation of the new stockholders was contingent on their taking licenses for the process, and further contingent on companies having an aggregate of at least 1,467,850 barrels of daily crude capacity.

New Directors and officers of Hydro Patents Co. have been elected, replacing the original Standard Oil (New Jersey) representatives.

Du Pont Rayon's Ampthill plant is continuing to recall employes who have been laid off for the past two months.

Carboloy Co., subsidiary of G. E., announced a general price reduction for Carboloy cemented carbide tools and raw metal. New price schedule is based upon a sliding scale according to total weight of Carboloy metal in each individual tool or blank.

National Lead leased a large two-story building in Seattle, where a new warehouse will be established.

Leatex Chemical removed its offices and manufacturing facilities to its own building at 2722 North Hancock St., Philadelphia, Pa.

Colgate-Palmolive-Peet placed its operations on a five-day week basis with five days' pay, effective July 1.

Frank R. Eager, formerly with Harshaw Chemical, is planning to open an office and warehouse later in the year.

United Dyewood refunded the sum of $72,410 for an over-assessment of Federal taxes in the year 1918.

Ingersoll Steel & Disc, Chicago (Borg-Warner subsidiary) has perfected a commercially successful two-ply stainless steel. A perfect bond between stainless steel and carbon steel can be made.

Merck is offering a special price on 50 of the most called-for prescription chemicals.

Link-Belt is marketing a new motorized speed reducer.

Michigan Alkali appointed Merchants Chemical direct local Philadelphia representative with Fred E. Loud as resident manager.

A. H. Mathieu, formerly with Sherwin Williams and later Olean Sales, formed a new company to manufacture and deal in heavy chemicals in the Paterson area. Irving D. Hopper, formerly of the Second National Bank of Paterson and the LaFrancaise Piece Dye, is associated with Mr. Mathieu.

U. S. I.'s exhibit "The Manufacture of Industrial Ethyl Alcohol," a two reel film, was well attended at the Motion Picture Theatre of the N. Y. Museum of Science and Industry, 220 E 42 St., N. Y. City, on the four days of presentation.

Federal Trade Commission dismissed the case against Patuxent Guano, July 12, involving the use of the term "guano" and also the term "manufactured by" by a company having no manufacturing facilities.

Company News

National Carbon is exhibiting a rare collection of lamps to portray "Two Thousand Years of Light." Exhibit is located at 306 Madison Ave., N. Y. City.

Potash Co. of Canada formed with headquarters at Montreal. Company will carry on the business formerly conducted by the N. V. Potash Export My., Inc., of Amsterdam, Holland. H. Hollesen is president and managing director.

Hazard Advertising retained as advertising agency by the newly formed American Cyanamid & Chemical and subsidiaries. Hazard also acts in a similar capacity for Wishnick-Tumpeer, Givaudan-Delawanna, Electro-Bleaching Gas, Niagara Alkali and General Dyestuffs.

U. S. I. developed new double head drum which will enable the consumer of solvents and other wet chemicals to secure mixing instructions and other information on the day of delivery. Instructions and other information are enclosed between an outer protective head and the bunghead.

Consolidated Cinnabar, Steamboat Springs, Nev., received machinery, and development work will soon be under way.

Consolidated Chemicals, Ltd., established a plant in Saskatoon recently, for the manufacture of insecticides, larvaecides and fertilizers.

Naugatuck Chemical will suspend manufacturing operations from Aug. 6 to 20, to allow time for general repairs and an inspection of factory equipment and also to permit all company employes to take two weeks vacation at one time.

Victor Chemical will exhibit at the Chicago Exposition, "A Century of Progress," reservation having been made for an extensive scientific exhibit in the Hall of Science.

Consolidated Products, dealers in used machinery and equipment removed to new offices (Rooms 2008-14) located on the 20th floor at their present address, 15 Park Row, N. Y. City.

Geigy Co., sole selling agents for J. R. Geigy Soc. An., Basle, completed a new color for the cotton and rayon trades known as "Solophenyl Fast Blue Green, B. L."

Florasynth Laboratories, Inc., appointed exclusive representative in the U. S. for citrus oils made by Fratelli Barbagallo de Mauro, Fiumefreddo, Sicily.

U. S. Potash, a subsidiary of Pacific Coast Borax, has the work of constructing a factory at Carlsbad, N. M., about one-third finished. Total cost of this plant will be about $900,000.

John S. Crowl, attorney and receiver for Westmoreland Products, Philadelphia, filed his first and final accounting as receiver with the Federal court for the first district of Pennsylvania. The report was filed July 25 and will be confirmed absolutely, unless exceptions are filed within fifteen days from the date of filing.

Lever Bros.' Edgewater plant is nearly completed. While reports have been current to the effect that operations would begin some time this week, it has been learned that the $2,000,000 plant will not be opened until some time in September.

Kalbfleisch is now agent for the Snow-White Co., and will introduce the latter's new cold water process for reclaiming waste paper.

McKesson & Robbins formed new subsidiary known as McKesson-New York Drug, Inc. New subsidiary has taken over the two New York branches of the McKesson-Gibson-Snow Co., Inc., located in the Bronx, and the Littell branch of the same subsidiary.

Merrimac is now operating on a five day week basis. Practically all heavy chemical manufacturing plants are now on the short week basis.

H. J. Baker & Bro., appointed sole distributors of genuine Peruvian bird guano in this country. An agreement with the Peruvian government will enable the Baker firm to import this commodity in cargo lots for discharge at Gulf and Atlantic ports.

A. & H. Miller, Inc., N. Y. City appointed selling agents for Michigan Alkali's "Wyandotte" brand of calcium chloride.

Robert P. Robinson of Wilmington and Lawrence Phillips of Rumson, N. J., appointed receivers in U. S. District Court in Wilmington for the Valspar Corp., manufacturers of paints and varnishes.

John N. Dallon, formerly with Brown-Edwards, appointed manager of the newly-opened N. Y. office of Wilbur-Ellis, handlers of vegetable and fish oils and allied products. Wilbur-Ellis has offices in Chicago and on the Pacific Coast.

Leroy Oldham & Co., Baltimore manufacturers' agent and broker in chemicals, moved to 29 West North ave.

Trade Acceptances

DuPont and R. & H. officials announced during the month that they were in sympathy with the adoption of the trade acceptance plan. The formal statement of the duPont Company issued July 5 and signed by President Lammot duPont was as follows:

Expanding Credit

"The Banking and Industrial Committee of the Second Federal Reserve District, recently appointed by Governor Harrison of the Federal Reserve Bank of New York to devise ways and means of extending needed credit to industry and thus improve the economic condition of the nation, has formally announced its approval of a plan to broaden the use of the Trade Acceptance.

"E. I. du Pont de Nemours & Company and its subsidiaries and affiliated companies will support the efforts of the Banking and Industrial Committee by adopting the practice of taking short-term acceptances from responsible customers in payment for goods sold to them, and of issuing Trade Acceptances promptly in payment for goods purchased.

"We are supporting the Trade Acceptance Plan in the belief that it will assist legitimate business to obtain needed credit from the banks; it will increase Bank deposits; and it will serve as a means of expanding the Federal Reserve Banks' outstanding credit all of which should tend to stimulate business, stop further deflation and accelerate the return of normal conditions.

"The Trade Acceptances received by our companies in payment for products sold will be discounted at banks or sold to banks through note brokers. We shall urge the banks receiving Trade Acceptances to rediscount them with the Federal Reserve. Your cooperation and support of this procedure should materially expedite the return of many unemployed to the ranks of industry and aid in reviving business to a more normal volume."

New Clays

Discovery of commercially practicable processes for the purification of certain Pennsylvania clays, to make them available for Pennsylvania's vast clay-working industries, is the object of one of the major industrial projects of the Greater Pennsylvania Council. An enormous tonnage of Pennsylvania clay deposits, comparatively near the state's clay industries, is now unusable because of the presence of contaminants, (iron, silica and lime).

The Council, a state department, was created by the 1931 Pennsylvania Legislature to plan for the wider development of the state's resources and the welfare of its people. Its chairman is Dr. Ralph D. Hetzel, president of Penn. State; its director is Dr. Charles Reitell, formerly of the University of Pittsburgh, and the chairman of its technical advisory committee is William A. Hamor, Mellon Institute assistant director.

The Council's clay project, which is being conducted at Mellon Institute of Industrial Research, Pittsburgh, is in charge of Dr. F. P. Lasseter, a physical chemist, assisted by Earl C. Petrie, a ceramist.

Benjamin Wins

C. S. Benjamin, General Chemical, was the best golfer in the 2nd tournament of the Salesmen's Association held July 12 at the Braidburn Country Club, Madison, N. J. He turned in gross score of 85.

Robert W. Brewer, Liberty By-Products had the second lowest gross score, 88. C. E. Kelly, of Haggerty Brothers, chemical glassware, was third with 93.

The winners in the low net contest were F. T. Smith, of Merck, 100-25-75; John Powell, of John Powell & Co., 109-32-77; and C. O. Lind, of Dow, 100-22-78.

The guessers in the kicker's handicap ranked as follows:—First C. L. Lightfoot, Salem Glass Wks.; second, W. G. MacCausland; third, Ira P MacNair, MacNair-Dorland; fourth, William Barry, Mallinckrodt.

Gum Research

American Gum Importers' Association has launched a research program on natural gums and will retain a well-known laboratory to undertake the work at once. A special committee of the association has been working for the past year on an effective research program and the decision to start the work was made at a meeting of the association on July 22.

New Aid

National Research Council announced that the Rockefeller Foundation will aid chemical research by providing for five projects.

Chemists selected, and their fields, are: John G. Aston, Pennsylvania State College, for research on heat capacities of simple organic nitrogen compounds. W. L. Beuschlein, University of Washington, for a study of hydrogenation of coal in various dispersion media. Barnett F. Dodge, Yale University, for investigation of the solubility of gases in liquids at high pressures, and equiibria in organic chemical reactions at high pressures. E. C. Gilbert, Oregon State College, for research in the thermo-chemistry of hydrazine and its compounds, and Robert Taft, University of Kansas, for investigation of the microstructure of metals (copper and silver) deposited in the presence of addition agents.

W. H. Fulweller, chief chemical engineer of the United Gas Improvement Co., and enthusiastic amateur astronomer, is preparing to go to Fryeburg, Me., with his wife and their three sons, to photograph the total eclipse on Aug. 31.

Foreign

Dispatches from abroad reporting the formation of the new nitrogen cartel call attention also to the break-down in the Sicilian sulfur Consortium and the suspension of the Spanish-Italian mercury cartel.

Conditions within the Sicilian sulfur combine have been going from bad to worse for sometime. For eight years it was administered by a royal commissioner, but last year the management was returned to the members. One of the main difficulties has been the necessity for caring for a large number of small inefficient mines and conflicts between producers and refiners have been numerous in the past twelve months.

Montecatini Competition

One of the most serious aspects of the situation, according to foreign reports, is the intense competition that the Montecatini is waging. Last year this company which is not a member of the group produced about one-third of the entire Italian output and is said to have undersold the Sicilian producers. In addition to the Montecatini competition, the Sicilian producers have been forced to face increasing activity from pyrites producers. Sales of Sicilian sulfur in 1930-1931 declined to 181,370 tons against a normal demand of about 200,000 tons a year. Montecatini's sulfur production is now estimated to be about 100,000 tons a year.

It is understood that the Bank of Sicily has taken over the stocks of the Consortium, estimated at 200,000 tons, and has been instructed by the Italian government to liquidate these slowly over a period of of six years. The Italian government is said to have appropriated $204,000 to maintain the price.

Interest in this country is aroused because of the possible effect the break-down will have on international sulfur prices. The Sicilian Consortium was a member of the international union controlling prices for sulfur in all countries with the exception of the U. S. Under the present arrangement the U. S. is allotted about 70 per cent of the world markets and the Italian and other producers the balance.

A later report from abroad indicates that a determined effort is being made to renew the consortium and to include the Montecatini. It is thought here that such a move may be successful.

Mercury Cartel

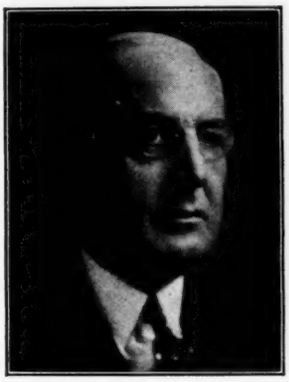
Reports on the situation in mercury are conflicting. Earlier dispatches announced the termination of the Mercurio-Europeo, formed in 1928, by the Spanish and Italian producers. The official representatives in this country for the cartel are reported as stating that the cartel has not been dissolved. Still other reputable sources of information state that the Italians have

asked to be relieved of adherence to the combine which would most certainly end the operations of the cartel for all practical purposes. Whether or not the cartel has been officially ended mercury prices have been extremely weak in the past month.

Westeregeln German potash concern ceased production of sulfate and muriate according to foreign reports and is devoting its operations to the electrolytic manufacture of caustic potash, chlorate of potash, and by-product chlorine.

Personal

Horace Bowker, president, A. A. C. and a director of The N. F. A., is the author of an article on "Increased Farm Income and Industrial Stability" which appeared



Horace Bowker
Urges sound principles in solving the farmers' problem

in the July 25th issue of *Business Administration*. He urges that an end be put to the current air of "defeatism" in connection with the farm problem and that a plan be worked out for acreage reduction and increased crop yield per acre.

"No price-stabilization measure, no equalization fee, no debenture plan," declares Mr. Bowker "can lead to anything but further difficulty unless it carries with it a workable plan for controlling crop output."

W. R. Grace, president of W. R. Grace & Co., sailed July 18 on the Europa.

Robert A. Millikan will receive the Roosevelt medal for distinguished service in science at a dinner to be given on the 74th anniversary of President Roosevelt's birth at Roosevelt House, 28 E. 20th St., N. Y. City on Oct. 27.

H. A. Gardner, president of the H. A. Gardner Laboratory, Inc., Washington, connected with the Paint and Varnish Institute, received the honorary degree of doctor of science from Lehigh.

Edward Stern, Louis Stern Sons, tallows and greases, sailed on the Europa July 1 for a five weeks' pleasure trip.

G. Jebsen, manager, National Lead's titanium interests in Europe, is in New York for a short visit.

Joseph R. Esposito, president Ault & Wiborg Varnish, is spending several weeks at the company's main plant in Cincinnati.

A. S. Donaldson of Leominster, Mass., designer and creator of products for Du Pont Viscoloid, named as one of the jury which is annually selected to award prizes for the work done by the students of the design department of the Massachusetts School of Art.

The Swift dynasty continues uninterrupted in Swift & Co., contrasting with the low state of fortune in the Armour family, the two outstanding meat-packing families of America. Charles Henry Swift has been elected chairman of the board, succeeding his brother, Edward, deceased. Mr. Swift has been vice chairman of the board and a director of the company, and is also vice-president and director of Compania Swift Internacional.

Born on Dec. 27, 1872, Charles Henry Swift, early entered the packing business of his father, under whose tutelage he rose to occupy executive posts. He has played a large part in the development of the branch house business of Swift & Co. Unperturbed by the action of Armour interests divorcing the meat-packing branch from the fertilizer division, Swift & Co., is planning to hold direct control of the company's affairs in the fertilizer field.

Dr. E. H. Kilheffer, manager fine chemicals department of du Pont and previous to the purchase of Newport Chemical by du Pont, vice-president in the former, is on a business trip abroad. After spending some time in Paris he plans to visit several points in England and Germany.

F. E. Hamor, editor of *Chemical Age* (London) since its founding, resigned because of ill-health. He will remain a director in Benn Brothers, publishers.

William S. Gray, chairman of the board of directors of William S. Gray & Co., is enjoying a vacation on the European continent.

Kenneth G. Miller elected president and general manager, Midwest Chemical, which was recently organized to distribute chemicals and pharmaceuticals at Lansing.

Wendell R. Swint of du Pont, Warren Simonson, Standard of N. J., and Edmund S. Pendleton of Denver Chemical Manufacturing, were among the directors elected at a recent meeting of the American Manufacturers' Export Association.

E. K. Bolton, chemical director for du Pont, awarded the degree of doctor of science by Bucknell.

George Felder, N. Y., office manager, Mallinckrodt Chemical, severed his connection with that firm after more than 20 years of service.

Council of the American Leather Chemists Association elected H. B. Merrill of Milwaukee, as Ordinary Member of the Council to fill the vacancy made by the resignation of G. D. McLaughlin upon his election to the presidency.

Worcester Polytechnic recently conferred the doctorate of engineering on Alfred D. Flinn, director of the Engineering Foundation, N. Y. City.

Dr. H. B. Marshall, printing expert with Ciba, recently spoke to the students of textile chemistry and dyeing at Clemson College.

V. G. Bartram, vice-president of Shawinigan Chemicals, Montreal, Canada, sailed recently for England. He expects to be away until the end of July.

Next Chemical Exposition

The 14th Exposition of Chemical Industries, the next Chemical Show, will be held in N. Y. City during the week of Feb. 27th to March 4th, 1933. Grand Central Palace will again be the location and three entire floors will be devoted to the exhibits showing the newest developments in raw materials, machinery, and manufactured products. Already more than 179 companies have reserved space. The exhibitors represent over forty American industries which are classified as chemical.

Special groupings of exhibits are being made such as (1) General Equipment; (2) Chemicals and Chemical products; (3) Plastics, Molded Products, Lacquers, etc.; (4) Laboratory Equipment and Supplies; (5) Instruments of Precision; (6) Containers and Packaging Section and Materials Handling equipment; (7) Raw Materials, Natural Resources and Industrial Opportunities, and (8) Educational Instructional exhibits.

The last exposition, which was held in 1931, was attended by 103,000 and more than 22,000 registered.

Canadian Industries, is to erect in Hamilton a plant unit for the manufacture of liquid sulfur dioxide. A contract has been awarded to Anglin-Norcross of Toronto for the work.

Manufacturers of hydrogen peroxide have received a definite ruling from the Deputy Commissioner of Internal Revenue, stating that this material is not affected by the new Federal tax on toilet preparations.

Babcock & Wilcox obtained exclusive rights for the U. S. and Canada for heat system in sulfite cooking developed by Kimberly-Clark.

Superphosphate Figures

Production of superphosphate in May as reported to the Bureau of Census by 87 manufacturers operating 158 plants totalled 86,200 short tons of bulk superphosphate and 1,620 tons of base and mixed goods. This compared with 146,881 tons of bulk material and 10,804 tons of base goods in April. The stocks of bulk superphosphate on hand at the end of the month were 857,096 tons, against 895,696 tons in April and 891,149 tons at the end of May last year. Details of production, shipments and stocks on hand for May, a comparison with April, and a comparison for the January-May period follow:

	†*May* 1932	**April* 1932
Production and receipts—		
Production—		
Bulk superphosfate—		
Total, U. S.	86,200	146,881
Northern district	76,110	99,699
Southern district	10,090	47,182
Base and mixed goods—		
Total, U. S.	1,620	10,804
Northern district	1,116	2,120
Southern district	504	8,684
Received from other acidulators (including inter-company transfers)‡—		
Total, U. S.	16,609	18,573
Northern district	14,872	14,130
Southern district	1,737	4,443
Shipments—		
Bulk superphosphates—		
Total, U. S.	267,640	707,458
Northern district	178,561	326,332
Southern district	89,079	381,126
To mixers—		
Total, U. S.	40,625	143,893
Northern district	26,347	73,521
Southern district	14,278	70,372
To other acidulators (including inter-company transfers)—		
Total, U. S.	10,943	17,109
Northern district	8,561	11,733
Southern district	2,382	5,376
To consumers—		
Total, U. S.	68,887	255,117
Northern district	40,667	98,859
Southern district	28,220	156,258
Base and mixed goods—		
Total, U. S.	147,185	291,339
Northern district	102,986	142,219
Southern district	44,199	149,120
Stocks—		
Bulk superphosphate—		
Total, U. S.	857,096	895,696
Northern district	443,727	441,731
Southern district	413,369	453,965
Base and mixed goods—		
Total, U. S.	281,227	403,222
Northern district	122,096	210,343
Southern district	159,131	192,879
	Total 1932	*Jan.-May 1931*
Production and receipts—		
Production—		
Bulk superphosphate—		
Total, U. S.	821,926	1,389,580
Northern district	522,986	827,471
Southern district	298,940	562,109
Base and mixed goods—		
Total, U. S.	42,537	.....
Northern district	14,311	.....
Southern district	28,226	.....
Received from other acidulators (including inter-company transfers)‡—		
Total, U. S.	102,798	.....
Northern district	73,715	.....
Southern district	29,083	.....
Shipments—		
Bulk superphosphates—		
Total, U. S.	1,669,463	....
Northern district	843,365	.....
Southern district	826,098	.....
To mixers—		
Total, U. S.	422,900	.....
Northern district	242,341	.....
Southern district	180,559	.....
To other acidulators (including inter-company transfers)—		
Total, U. S.	71,708	.....
Northern district	45,598	.....
Southern district	26,110	.....
To consumers—		
Total, U. S.	516,143	802,483
Northern district	219,733	389,992
Southern district	296,410	412,491
Base and mixed goods—		
Total, U. S.	658,712	.....
Northern district	335,693	.....
Southern district	323,019	.....

*Revised.
†Preliminary.
‡Includes both bulk superphosphate and base and mixed goods.

Linseed Oil vs. Chinawood Oil

With most of the oils and fats showing stronger tendencies the rather weak position of linseed oil is of more than passing interest. It is of importance to note in the following international production figures on flaxseed that little variation takes place from year to year in total world production.

Flaxseed Production
(000 omitted)

	Argentina	*U. S.* (*a*)	*India* (*b*)	*Canada* (*c*)	*Total* (*d*)
1909-13	31,117	19,543	20,578	12,040	111,187
1921-25	52,365	17,887	18,680	6,438	119,200
1926-27	69,091	19,335	16,080	5,995	153,115
1927-28	79,444	25,847	16,240	4,885	156,009
1928-29	78,377	19,928	13,920	3,614	150,000
1929-30	50,044	15,910	12,880	2,060	122,750
1930-31	70,264	21,240	15,200	5,069	158,058
1931-32	82,672	11,018	15,120	2,565	122,347

(a)—The United States crop is sown from May to June and harvested in September.
(b)—The Indian crop is sown from August to October and harvested in January.
(c)—The Canadian crop is sown in June and harvested in October.
(d)—Totals shown include all countries producing flaxseed.

The question of substitution with chinawood oil brings up the relationship of the prices of chinawood and linseed and the following comparison made by Patton's Monthly (Pittsburg Plate Glass) is of timely interest.

Annual Average Price of Linseed Oil as Compared With China Wood Oil (price per pound)

Average	*Linseed Oil*	*China Wood Oil*
1913	6.5c	7.5c
1914	7.2	7.2
1915	8.8	6.9
1916	10.4	11.9
1917	15.2	17.0
1918	21.3	25.8
1919	23.3	22.1
1920	19.2	20.0
1921	9.9	12.9
1922	11.2	13.5
1923	13.2	24.3
1924	12.9	15.9
1925	13.9	13.5
1926	11.2	14.6
1927	10.4	19.1
1928	10.0	15.4
1929	12.4	14.6
1930	12.5	9.7
1931	8.3	7.0

Col. Samuel O. Wynn, Federal Supervisor of Alcohol Permits for the territory of New Jersey, Pennsylvania and Delaware, and his chief attorney, Richard H. Woolsey, resigned last month to enter the private practice of law in Philadelphia.

CHEMICAL STATISTICS

Year and month	General operations: Employment F. R. B. Indexes: Unadjusted	Adjusted	Pay rolls, unadjusted	General operations: Stocks: Manufactured goods	Raw materials	Alcohol: Ethyl	Refined methanol	Synthetic methanol	By-product coke	Explosives	Rosin, wood	Turpentine, wood	Superphosphates	Fertilizer: Consumption[1]	Total imports	Nitrate of soda imports
	Monthly average, 1923-1925=100					Production: Thousands of gallons			Thous. of short tons	Thous. of lbs.	Barrels		Thous. of short tons		Long tons	
1930: May	104.6	106.5	106.6	134	96	13,245	406	583	4,235	36,147	40,933	7,454	389	235	87,973	42,308
1931:																
May	91.4	93.0	88.4	127	88	13,120	118	784	3,126	26,960	33,593	5,996	224	195	72,159	34,006
June	86.7	89.6	84.1	122	88	13,111	107	654	2,715	25,981	34,747	5,675	178	74	59,970	29,711
July	86.2	89.4	82.9	116	87	11,975	92	438	2,569	25,068	28,495	4,370	196	25	97,358	18,809
August	84.4	86.6	80.4	115	85	12,363	65	316	2,443	24,548	17,074	2,607	210	40	127,599	35,367
September	86.0	85.7	80.8	118	100	12,952	57	663	2,310	26,598	25,058	3,797	173	91	146,700	48,590
October	85.7	85.4	80.8	125	121	16,037	56	510	2,389	25,282	26,102	3,922	188	94	120,822	33,968
November	83.5	83.1	76.4	129	134	14,084	87	364	2,276	24,509	21,440	3,547	179	66	77,849	29,871
December	82.0	81.9	75.0	124	125	14,002	142	328	2,234	18,595	23,242	3,733	231	67	70,754	17,029
1932:																
January	81.7	81.9	71.4	128	116	13,224	149	586	2,101	18,175	23,196	3,626	215	172	89,070	30,114
February	81.1	80.2	72.1	136	107	10,340	120	546	1,996	18,064	20,006	3,121	204	365	84,160	8,404
March	81.1	78.6	70.1	135	102	9,526	103	514	2,089	17,092	26,187	4,329	170	644	100,136	54
April	82.4	78.5	68.5	132	95	10,137	113	502	1,883	16,804	26,443	4,415	147	868	61,433	2,675
May	**78.3**	**79.7**	**66.9**	**129**	.....	.....	**72**	**743**	**1,743**	.....	**30,597**	**5,151**	.....	**156**	**84,746**	**37**
Monthly average, January through May:																
1930	109.9	.....	109.7	137	106	11,632	412	533	4,191	32,513	42,077	7,775	408	1,016	210,557	78,775
1931	94.6	.....	90.7	130	98	11,388	222	747	3,104	27,482	31,908	5,694	278	726	149,981	67,098
1932	**80.9**	.....	**69.8**	**132**	.....	.....	**111**	**578**	**1,962**	.....	**25,286**	**4,128**	.....	**441**	**83,909**	**8,257**

[1] Southern States.

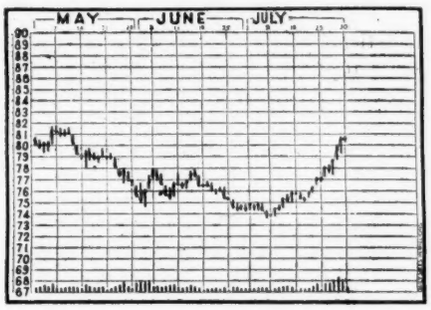
Reproduced from Current Survey of Business, U. S. Dept. of Commerce

The Financial Markets

Stocks and Bonds Advance Briskly—Quarterly Earnings Reflect Dull Condition of Business—Va.-Carolina-Armour Fertilizer Merger Temporarily Halted—Dow and Freeport Texas Declare Regular Dividends—Du Pont 2nd Quarter Statement

The stock market staged a decided recovery in the last two weeks of July after being in the doldrums for months. The appreciation for 240 representative stocks amounted to $2,893,432,823, or

Stock Market Trend



—N. Y. Herald Tribune

39 per cent. The advance was greater than in any month since June 1931. The loss in June 1932 amounted to $209,693,962 or four per cent.

Optimistic

The sudden turn in the trend can be attributed to several reasons, but clearly the market during June and the first two weeks of July was in an oversold position. The sustained recovery in the past four or five weeks in the hog market, the improvement in commodity prices generally, the change for the better in the bond market, the adjournment of Congress, and the better tone in business combined to inject into the market a note of optimism for the future that has been sadly lacking for months. The opinion seems to be spreading rapidly among all classes that the worst is over and that with minor fluctuations business will continue to show gradual improvement. Not only did values increase, but in the last two weeks the volume of trading clearly indicated a broader interest by the public.

The average gain for the N. Y. Times index of 240 representative issues was 3.498 points. The following table shows the net change in points in each group as well as the change in values.

Group and Number of Issues	*JULY Avr. Net Change in Points*	*Change in Values*
Amusements (5)	+ 2.450	+ $23,881,624
Building equip. (9)	+ 2.889	+ 41,062,034
Business equip. (4)	+ 2.594	+ 18,722,945
Chain stores (14)	+ 2.125	+ 91,898,243
Chemicals (9)	**+ 4.597**	**+ 168,784,625**
Coppers (15)	+ 2.167	+ 101,861,669
Department stores (10)	+ 1.925	+ 19,731,729
Foods (19)	+ 4.158	+ 233,055,357
Leathers (4)	+ 1.063	+ 1,563,184
Mail order (3)	+ 3.208	+ 43,117,306
Motors (15)	+ 1.358	+ 205,155,920
Motor equip. (7)	+ .554	+ 3,869,386
Oils (22)	+ 2.494	+ 525,435,971
Public utilities (29)	+ 5.573	+ 697,554,057
Railroads (25)	+ 6.480	+ 433,629,839
Railroad equip. (8)	+ 3.766	+ 40,629,685
Rubber (6)	+ 1.792	+ 14,310,547
Steels (13)	+ 3.510	+ 100,881,012
Sugars (9)	+ 1.833	+ 11,505,370
Tobaccos (14)	+ 4.964	+ 116,782,320
Aver. and total 240 issues	+ 3.498	+$2,893,432,823

Deflation

The degree the market had become oversold, particularly in the last four or five months, may be clearly be seen from the following compilation, showing the degree of deflation in stocks in six important divisions of industry. From the end of September, 1929, to the end of June, 1932, values in these 240 stocks depreciated $46,661,000,000, or about 91 per cent. In 22 of the 33 months of that period stock prices declined.

Groups	*P. C. of Decline*	*Groups*	*P. C. of Decline*
Chemicals	92	Public Utilities	91
Coppers	95	Railroads	95
Oils	83	Steels	98

In other words, only about 10 per cent of the values at the end of September. 1929, remained at the end of June, 1932,

Chemical stocks shared in the general advance, the total appreciation for nine of the leading common stocks amounting to $168,784,625. The loss for these stocks in the first six months of 1932 was $599,187,299. In July the recovery amounted to 28 per cent of this total.

Allied Chemical & Dye	$29,415,778
Commercial Solvents Corp.	6,009,232
Davison Chemical Co.	819,109
Du Pont de Nemours & Co.	76,076,571
Mathieson Alkali Works	2,764,353
Texas Gulf Sulphur	13,972,200
Union Carbide & Carbon	38,038,283
U. S. Industrial Alcohol	1,448,645
Virginia-Carolina Chemical	240,454
Total	$168,784,625

Average Price

CHEMICAL MARKETS' Average Chemical Common Stock Price reflected the rise in stock values in July. This is the first gain made since February and carried values back to the level prevailing in the middle of April. The Price stood at $16.49 on July 2; $15.98 on July 9; $17.71 on July 16; $18.37 on July 23; and $20.73 on July 30. The Price stood at $43.01 on July 31, 1931.

2nd Quarter Earnings

Financial reports for the second quarter indicate quite clearly the reduced state of business activity. In most instances, Union Carbide being one outstanding exception, earnings in the second quarter fell below the figures reached in the first quarter of 1932. When compared with the June quarter of 1931 the decline is still more striking. Because of the better sentiment now prevailing, the financial statements for the third quarter will be scanned closely when they are issued to determined whether such sentiment has really been translated into orders and profits. A comparison of quarterly earnings per share of common stock of four of the leading companies is given in the following table:

Company	*1932 June Quarter*	*1932 March Quarter*	*1931 June Quarter*
DuPont	.27	.74	$1.23
Mathieson Alkali	.20	.32	.51
Monsanto Chemical	.60	.64	.97
Union Carbide	.25	.22	.50

Price Trend of Chemical Company Stocks

	June 25	*July 2*	*July 9*	*July 16*	*July 23*	*Net Change*
Allied Chemical	46	47⅜	45½	48½	49¼	+3¼
Air Reduction	37⅛	30⅞	31½	34½	36⅛	—1
Anaconda	3⅝	3⅛	4	4	4	+ ⅛
Columbian Carbon	17½	17⅜	17	20	20⅞	+3⅜
Com. Sol	4⅜	5	4¾	5¾	6⅜	+ ¾
Du Pont	25½	23¾	22⅜	25½	24	—1½
Mathieson	10⅝	9⅛	10¼	11½	11¼	+ ⅝
Monsanto	17¼	16⅝	16¼	18	18½	+1¼
Stand. N. J.	23⅞	24½	24	26⅜	27⅞	+4
Texas Gulf	13½	13	12½	15⅛	16⅝	+3⅛
U. S. I.	15¼	16¾	15	17	18⅜	+2⅞

Over the Counter Prices

	June 30 Bid	June 30 Asked	July 30 Bid	July 30 Asked
J. T. Baker	9	13	9	13
Dixon	22	27	23	30
Merck, pfd	47	52	47	52
Petroleum Deriv.	2	4	2½	5½
Solid C	1	2	1	2
Tubize B	30	35½	30	35½
Worcester Salt		60		55
Young, J. S.	60		60	
Young, J. S. pfd.	75		74	

Dividend Action

Dow Chemical directors, July 19, declared dividends of 1¾% on the preferred stock and 50c a share on the common, payable Aug. 15 to stockholders of record at the close of business Aug. 1.

Sherwin Williams declared a quarterly dividend of 50 cents on the common stock, payable Aug. 15 to stock of record July 30, placing the issue on a $2 annual basis. In the preceding quarter a dividend of 75 cents was paid, prior to which the stock was on a $4 annual basis. Regular quarterly dividend of $1.50 on the preferred stock was also declared, payable Sept. 1 to stock of record Aug. 15.

P. & G. declared quarterly dividend of 50 cents a share on the common stock, placing it on a $2 annual basis. Previously the stock had been on a $2.40 annual basis.

Capital Reduction

Liquid Carbonic directors, July 15, declared quarterly dividend of 25 cents per share on the no par value common stock, payable Aug. 1 to holders of record July 20. This compares with 50 cents per share paid in each of the three preceding quarters, 75 cents per share in May and Aug. 1931 and $1 per share quarterly from May 1, 1929 to and incl. Feb. 1 1931.

N. Y. Stock Exchange has received notice from the corporation of the proposed reduction in capital represented by common stock from $49.32 to $30 per share.

Freeport Texas declared the regular quarterly dividend of 50 cents, payable Sept. 1 to stock of record Aug. 15.

Smith Agricultural Chemical, Columbus, Ohio, declared its regular quarterly dividend of $1.50 per share to holders of the $100 par preferred stock. It is to be paid Aug. 1 to stockholders of record July 21. The company maintains plants in Columbus, Indianapolis and Holland, Michigan.

Dividends and Dates

Name	Div.	Stock Record	Payable
Allied Chemical....	$1.50	July 11	Aug. 1
Atlas Powder, pfd..	$1.50	July 20	Aug. 1
Canadian Ind. Ltd. A & B.....	.62½	June 30	July 30
Columbian Carbon.	.50	July 18	Aug. 1
Consolidated Chem. Ind. pfd. A.....	.37½	July 15	Aug. 1
Dow Chemical.....	.50	Aug. 1	Aug. 15
pfd.....	1¾%	Aug 1	Aug. 15
DuPont, deb.....	1½%	July 9	July 25
Hercules Powd., pfd	$1.75	Aug. 4	Aug. 15
Mutual Chem. of Am., pfd.....	$1.50	Sept. 15	Sept. 28
preferred.....	$1.50	Dec. 15	Dec. 8
Natl. Carbon, 8%, pfd.....	2%	July 20	Aug. 1
Natl Lead, pfd. B...	$1.50	July 22	Aug. 1
Proctor & Gamble..	.50	July 25	Aug. 15
Spencer Kellogg...	.15	Sept. 15	Sept. 20
E. R. Squibb.....	.20	July 15	Aug. 1
1st, pfd.....	$1.50	July 15	Aug. 1

Postponed

Virginia-Carolina Chemical's special stockholders meeting held on July 11 to consider the merging of that company with Armour Fertilizer was adjourned until Aug. 8 because of the lack of a quorum.

Charles G. Wilson, president, Virginia-Carolina Chemical, made the following statement:

"It is reported that at the stockholders' meeting of Virginia Carolina Chemical Corp., I made the statement that unless the proposed Armour-Virginia Carolina Chemical fertilizer merger is consummated, the Virginia Carolina Chemical Corp. would be liquidated. The report is without foundation in fact."

With the merger idea again brought to the front by the Virginia-Carolina-Armour Fertilizer combination, reports from the South mentioned the names of Southern Fertilizer & Chemical, Mutual Fertilizer, Reliance Fertilizer. Chatham Fertilizer. Blue Belt Fertilizer and Southern States Fertilizer. Mills B. Lane, southern banker, is said to be the moving spirit in the reported negotioatins.

Colgate Reduces Dividend

Colgate-Palmolive-Peet directors, at their meeting recently, voted to reduce the dividend on the common stock rather than curtail national advertising, and declared it to be the policy of the company to conserve its resources, and maintain itself in a liquid position while present conditions continue. The directors declared a dividend of 25 cents per share on the common stock, payable July 25 to stockholders of record July 15. This compares with a dividend of 62½ cents per share in each of the two preceding quarters this year.

Distillation Patents

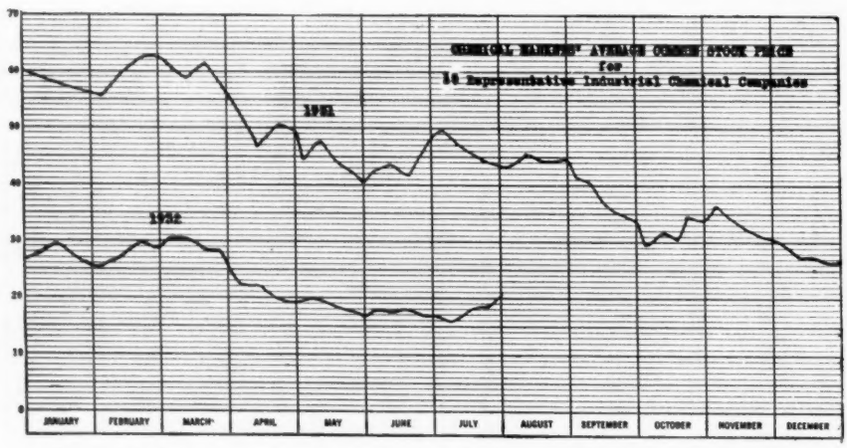
Petroleum Distillation recently organized for the purpose of overcoming difficulties which have arisen through diverse ownership of related and complementary patents. Atlantic Refining Co., Standard Oil Co., (Ind.), Standard Oil Co. (N. J.) and Foster Wheeler Corp. have reached an agreement under which each of them will grant licensing rights to a common agent for the use of their fractional distillation patents, according to a report in the July issue of "World Petroleum."

To make this effective thay have organized the Petroleum Distillation Corp., incorporated in Delaware, with an authorized capitalization of 2,000 shares of no par value stock. This stock will be purchased by the owners of the patents, that is, Standard Oil Development Co., Standard Oil Co. (N. J.), Atlantic Refining Co., Standard Oil Co. (Ind.), and Foster Wheeler Corp.

The officers are T. G. Delbridge of Atlantic Refining Co., president; J. J. Brown of Foster Wheeler Corp., and Robert E. Wilson of Standard Oil Co. (Ind.), vice-presidents.

Solvay American Investment has acquired $4,938,000 par value of its 15-year secured notes, Series A, at a cost of $4,595, 609, and the excess of par value over cost, after adjustment of unamortized discount, has been included in surplus, but these notes have not been retired, according to Gordon Auchincloss, president. Company still holds 499,697 shares of Allied Chemical common stock and 19,517 shares of American International common.

American Zinc, Lead & Smelting, Boston, continued the open market purchases of its own preferred stock begun in April, and to date has acquired roughly 3,000 shares at an average price of about $15.



July marked the first real advance in chemical common stock values since February

Foreign Markets

London	June 30	July 30
British Celanese	5s 6d	6s
Celanese.....	12s 6d	16s
Courtaulds.....	£1¼	£1¼
Distillers.....	42s 6d	48s 9d
Imperial Chemical	14s 3d	17s 9
Un. Molasses.....	5s	6s 3d
Paris		
Kuhlmann.....	450	510
L'Air Liquide	820	900
Milan		
Montecatini.....	82½	89
Snia Viscosa.....	109¼	116¼
Italgas.....	10	13
Berlin		
I. G. Farm.....	88	90

Earnings at a Glance

Company	Annual Dividends	Net Income 1932	Net Income 1931	Common Share Earnings 1932	Common Share Earnings 1931
Colgate-Palmolive-Peet:					
Six months, June 30	$1.00	$1,030,711	$4,003,694	h.13	h1.19
Commercial Solvents:					
June 30, quarter	.60	295,820	644,799	h.12	h.25
Six months, June 30	.60	589,274	1,182,343	h.23	h.46
Consol. Chem. Ind.:					
June 30, quarter	a1.50	77,751	122,449	b.01	c.43
Six months, June 30	a1.50	157,320	238,544	b.04	c.84
Corn Products Refining:					
June 30, quarter	3.00	2,042,208	3,104,888	.63	1.05
Six months, June 30	3.00	4,153,381	5,494,267	1.29	1.82
du Pont de Nemours:					
June 30, quarter	3.00	4,512,988	14,953,465	j.27	j1.23
Six months, June 30	3.00	14,202,421	27,610,394	j1.01	j2.24
Freeport Texas:					
Six months, June 30	2.00	1,060,743	1,185,092	1.45	1.62
International Salt:					
Six months, June 30	z.37½	174,517	353,435	.73	1.47
Lambert Co.:					
June 30, quarter	x4.00	1,147,699	1,462,222	1.53	1.95
Six months, June 30	x4.00	2,568,384	3,572,529	3.43	4.77
Mathieson Alkali:					
June 30, quarter	1.50	171,929	378,146	h.20	h.51
Six months, June 30	1.50	422,215	675,549	h.52	h.90
Monsanto Chemical:					
June 30, quarter	1.25	258,361	416,076	.60	.97
Six months, June 30	1.25	534,221	671,454	1.24	1.56
Texas Gulf Sulphur:					
June 30, quarter	2.00	1,384,423	1,939,967	.54	.76
Six months, June 30	2.00	3,106,958	4,388,165	1.22	1.72
Union Carbide & Carbon:					
June 30, quarter	1.20	2,254,997	4,506,155	.25	.50
Six months, June	1.20	4,236,437	9,119,825	.47	1.01

aOn Class A shares. hOn shares outstanding at close of respective periods. jOn average shares. xPlus extras. zLast dividend declared.

Company Reports

Mathieson Reports $171,929 for Quarter

Mathieson Alkali reports, for quarter ended June 30, net income for $171,929, after depreciation, depletion, federal taxes, etc., equivalent, after dividend requirements on the 7% preferred stock, to 20 cents a share on 650,436 shares of no-par common stock. This compares with $250,285, or 32 cents a common share in preceding quarter, and $378,146, or 51 cents a share on 650,380 shares, in the June quarter of previous year.

For six months ended June 30, net income was $422,215, after charges and taxes, equal to 52 cents a share on 650,436 common shares, comparing with $675,549, or 90 cents a share on 650,380 shares, in first half of 1931.

Income account for quarter ended June 30, compares as follows:

	1932	1931	1930	1929
Oper profit	$454,366	$689,168	$922,048	$941 367
Depr & depl	285,593	284,681	301,290	257,420
Profit	$168,773	$404,487	$620,758	$683,947
Other income	11,789	10,818	14,891	10,131
Total income	$180,562	$415,305	$635,649	$694,078
Federal tax	8,633	37,159	69,962	83,381
Net income	$171,929	$378,146	$565,687	$610,697

Six months ended June 30:

	1932	1931	1930	1929
Oper profit	$992,952	$1,294,308	$1,788,460	$1,772,682
Depr & depl	571,934	569,745	582,929	514,681
Profit	$421,018	$724,563	$1,205,531	$1,258,001
Other income	26,266	21,886	35,815	16,821
Total income	$447,284	$746,449	$1,241,346	$1,274,822
Federal tax	25,069	70,900	133,713	157,451
Net income	$422,215	$675,549	$1,107,633	$1,117,371

American Commercial Alcohol reports for six months ended June 30, net income of $244,405 after taxes, depreciation, etc., equal to $1.25 a share (par $20) on 194,747 shares of capital stock outstanding at end of period. This compares with net loss of $42,941 in the first six months of 1931.

Net income for quarter ended June 30, was $136,148 after taxes, depreciation, etc., equal to 70 cents a share on 194-747 shares of stock, comparing with net profit of $108,257, or 57 cents a share on 188,548 shares in the preceding quarter, and net loss $167,779 in the second quarter of previous year.

Du Pont Earnings Decline in 2nd Quarter

Du Pont's report for six months ended June 30, shows total income of $14,726,898, consisting of $4,861,939 net income from operations, after depreciation and obsolescence of plants and equipment; $7,484,000 dividends from General Motors investment, and $2,380,959 income from miscellaneous and marketable securities, etc. After deducting provision for Federal Income Tax of $488,885; and interest on bonds of subsidiary companies of $35,592, there remained net income of $14,202,421. Deducting dividends on debenture stock of $3,259,348, there remained for the common stock, including the company's equity in undivided profits or losses of controlled companies not consolidated, $10, 962,167, or $1.01 a share on 10,878,989 shares, the average number outstanding during the period. This compares with $2.24 a share for same period last year on 11,052,174 shares, the average number outstanding.

For quarter ended June 30, 1932, total income was $4,613,860, consisting of $1,000,811 net income from operations, after depreciation and obsolescence of plants and equipment; $2,494,667 dividends from General Motors investment, and $1,118,382 income from miscellaneous and marketable securities. After deducting provision for federal income tax of $83,268 and interest on bonds of subsidiary companies of $17,604 there remained net income of $4,512,988. Deducting dividends on debenture stock of $1,625,704, there remained for the common stock, including the company's equity in undivided profits or losses of controlled companies not consolidated, $2,903,033, or $0.27 a share on 10,814,210 shares, the average number outstanding during the period. This compares with $1.23 a share for same period last year, on 11,038,189 shares, the average number outstanding.

	Three Months Ended June 30th 1932	1931
Income from operations before provision for depreciation and obsolescence	$ 4,224,483	$10,094,621
Less—Provision for depreciation and obsolescence of plants and equipment	3,223,672	3,109,994
Net income from operations	$ 1,000,811	$ 6,984,627
Income received from investment in Gen. Motors Corp.	2,494,667	7,487,465
Income from miscellaneous and marketable securities, etc	1,118,382	1,293,337
Total income	$ 4,613,860	$15,765,429
Provision for Federal Income Tax	83,268	793,868
Net income before interest on bonds	$ 4,530,592	$14,971,561
Interest on bonds of subsidiary companies	17,604	18,096
Net income	$4,512,988	$14,953,465
Dividends on debenture stock	1,625,704	1,492,995
Consolidated earnings applicable to common stock	$ 2,887,284	$13,460,470
Including E. I. du Pont de Nemours & Company's equity in undivided profits or losses of controlled companies not consolidated, amount earned on common stock is	$2,903,033	$13,579,565
Average number of shares of common stock outstanding during the period	10,814,210	11,038,189
Amount earned a share	$0.27	$1.23

	Six Months Ended June 30th 1932	1931
Income from operations before provision for depreciation and obsolescence	$11,388,994	$17,414,188
Less—Provision for depreciation and obsolescence of plants and equipment	6,527,055	6,158,982
Net income from operations	$ 4,861,939	$11,255,206
Income received from investment in Gen. Motors Corp.	7,484,000	14,971,465
Income from miscellaneous and marketable securities, etc	2,380,959	2,525,841
Total income	$14,726,898	$28,752,512
Provision for Federal Income Tax	488,885	1,105,885
Net income before interest on bonds	$14,238,013	$27,646,627
Interest on bonds of subsidiary companies	35,592	36,233
Net income	$14,202,421	$27,610,394
Dividends on debenture stock	3,259,348	2,985,990
Consolidated Earnings Applicable to common stock	$10,943,073	$24,624,404
Including E. I. du Pont de Nemours & Company's equity in undivided profits or losses of controlled companies not consolidated, amount earned on common stock is	$10,962,167	$24,809,160
Average number of shares of common stock outstanding during the period	10,878,989	11,052,174
Amount earned a share	$1.01	$2.24

Monsanto Earns 60c a Share

Monsanto Chemical and subsidiaries report for quarter ended June 30, net profit of $258,361 after charges, depreciation and federal taxes equivalent to 60 cents a share on 429,000 no-par shares of capital stock. This compares with $275,859, or 64 cents a share in preceding quarter and $416,076, or 97 cents a share in June quarter of 1931.

Consolidated income account for six months ended June 30, compares as follows:

	1932	*1931*	*1930*
Gross profit	$1,997,185	$2,233,168	$2,078,443
Expenses	671,374	690,578	719,813
Balance	$1,325,811	$1,542,590	$1,358,630
Depreciation, etc	464,478	504,396	439,780
Research & develop exp	201,828	252,728	214,351
Oper profit	$659,505	$785,466	$704,499
Other ded (net)	13,921	16,061	*11,314
Income	$645,584	$769,405	$715,813
Fed taxes	111,363	97,951	93,414
Net profit	$534,221	$671,454	$622,399
Dividends	266,247	.....	.....
Surplus	$267,974	.....	.....

*Credit

Newport Reports Loss of $79,042

Newport Industries, and subsidiaries, report for quarter ended June 30, net loss of $79,042, after depreciation, interest and other charges, but exclusive of idle plant expenses, amounting to $9,634 charges against reserve created for that purpose. This compares with net loss in preceding quarter of $56,541, exclusive of $31,129 idle plant expenses.

For the six months ended June 30, net loss was $135,583 after charges, but exclusive of $40,763 idle plant expenses, which were charged against reserves for that purpose.

Consolidated income account for quarter ended June 30, the preceding quarter, and six months ended June 30, 1932, follows:

	Quar. ended June 30, '32	*Quar. ended Mar. 31, '32*	*6 mos. end. June 30, '32*
Sales, net	$467,250	$441,967	$909,217
Cost and expense	488,388	466,229	954,617
Loss	$21,138	$24,262	$45,400
Depreciation	46,655	52,020	98,675
Int. & other chgs,. net	15,982	11,093	27,075
Loss	$83,775	$87,375	$171,150
Loss on sale of stock	8,141	†14,592	†6,451
Dividends received	12,874	16,242	29,116
*Net loss	$79,042	$56,541	$135,583

*Exclusive of $9,634 idle plant expenses, charged against reserve created for that purpose in June quarter, $31,129 in March quarter and $40,763 for the six months ended June 30, 1932. †Profit.

Union Carbide Profits Higher

Union Carbide & Carbon and subsidiaries report for quarter ended June 30, net profit of $2,254,997 after interest, taxes, depreciation and preferred dividends of subsidiaries, equivalent to 25 cents a share on 9,000,743 no-par shares of stock. This compares with $1,981,439 or 22 cents a share in preceding quarter, and $4,506,155 or 50 cents a share in June quarter of previous year.

For six months ended June 30, net profit was $4,236,437 after charges and subsidiary preferred dividends, equal to 47 cents a share, comparing with $9,119,825 or $1.01 a share in first half of 1931.

Consolidated income account for quarter ended June 30, 1932, compares as follows:

	1932	*1931*	*1930*	*1929*
Net after fed tax	$4,303,045	$6,640,750	$8,602,073	$9,767,463
Int & sub pfd div	306,612	317,466	321,999	307,452
Depr, etc	1,741,436	1,817,129	1,973,272	2,135,714
Net profit	$2,254,997	$4,506,155	$6,306,802	$7,324,297

Six months ended June 30:

	1932	*1931*	*1930*	*1929*
Net after fed tax	$8,318,824	$13,384,163	$17,357,238	$19,413,963
Int & sub pfd div	614,416	628,483	630,439	617,204
Depr etc	3,467,971	3,635,855	3,947,214	4,268,516
Net profit	$4,236,437	$9,119,825	$12,779,585	$14,528,243

Hercules 6 Months' Profit $300,216

Hercules Powder reports for six months ended June 30, net profit of $300,216 after depreciation, federal taxes, etc., equivalent to $2.82 a share on 106,461 shares of 7% preferred stock, excluding 7,780 shares in treasury. This compares with net profit in first six months of 1931, of $736,103, equal, after dividend requirements on 7% preferred stock, to 55 cents a share on 606,234 no-par shares of common stock.

For quarter ended June 30, net profit was $213,011 after charges and taxes, equal, after dividend requirements on 7% preferred stock, to four cents a share on 583,077 common shares, excluding 23,157 shares in treasury. This compares with net profit in preceding quarter of $87,205 equal to 80 cents a share on 108,599 shares of 7% preferred stock, excluding 5,642 treasury shares, and net profit in June quarter of preceding year of $519,644, equal to 52 a share on common, after preferred dividend requirements.

Current assets as of June 30, including $6,696,364 cash and marketable securities, amounted to $14,568,413, and current liabilities were $646,543. This compares with cash and marketable securities of $6,836,773, current assets of $15,186,980, and current liabilities of $626,476 on December 31, 1931.

Income account for six months ended June 30, compares as follows:

	1932	*1931*	*1930*	*1929*
Gross inc	$8,746,680	$10,689,391	$14,039,330	$17,243,564
*Profit	331,224	825,712	1,818,188	2,353,574
Fed tax	31,008	89,609	219,720	318,036
Net profit	$300,216	$736,103	$1,598,468	$2,035,538
Pfd divs	376,167	399,843	399,843	399,843
Com divs	731,626	906,985	900,809	897,000
Deficit	$807,577	$570,725	†$297,816	†$738,695

*After depreciation, etc. †Surplus.

Freeport Texas Shows Slight Decline

Freeport Texas and wholly owned subsidiaries report for six months ended June 30, net income of $1,060,743 after expenses, depreciation, federal taxes, etc., equivalent to $1.45 a share on 729,844 no-par shares of capital stock. This compares with $1,185,092 or $1.62 a share in first half of 1931. An extraordinary charge of $442,941 for prospecting expenses for first six months of 1931 was charged directly against surplus account.

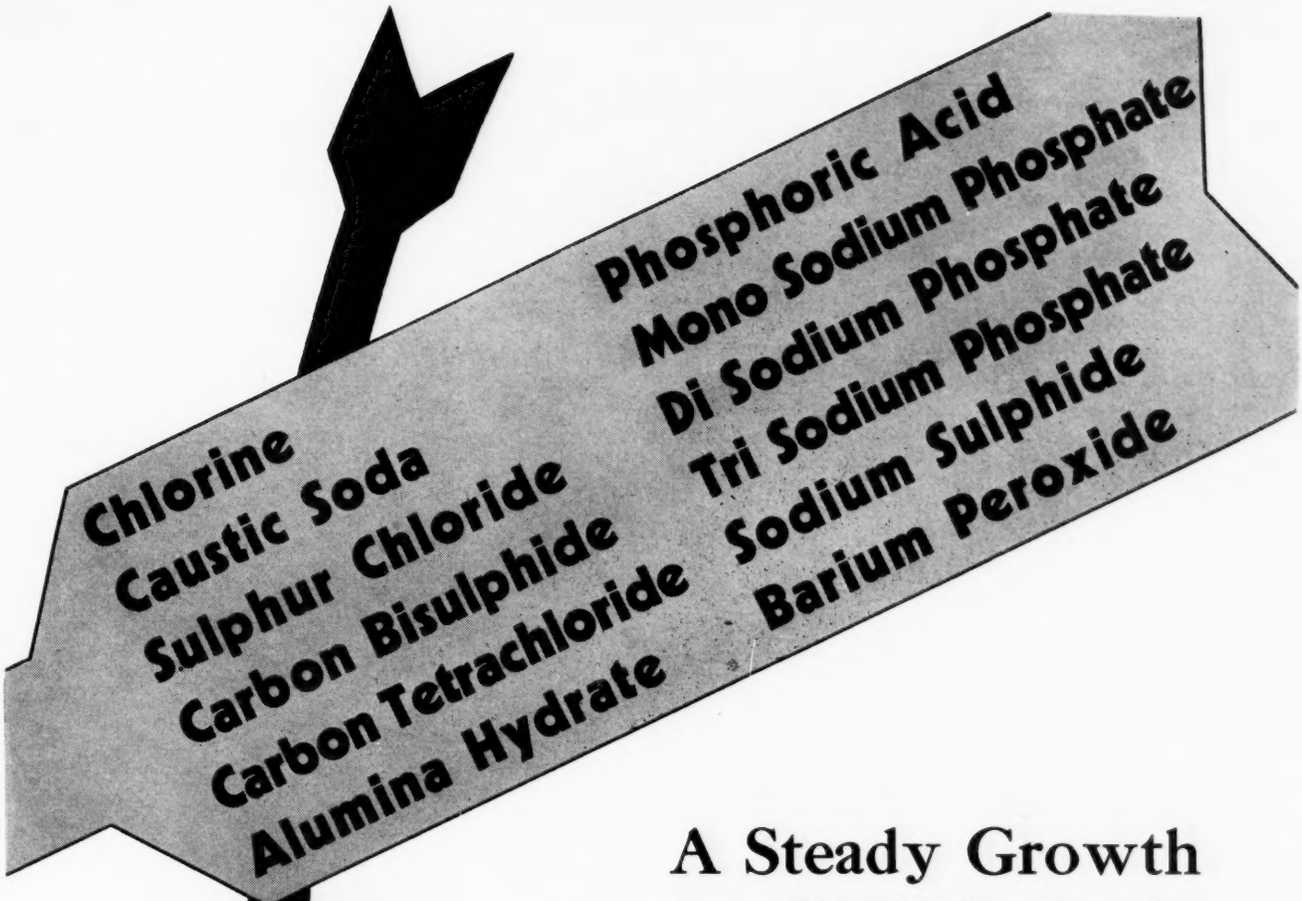
Current assets as of June 30, last, including $1,034,670 cash, amounted to $8,087,887 and current liabilities were $2,899,224. This compares with cash of $2,087,828, current assets of $8,958,-070 and current liabilities of $3,523,158 on June 30, 1931.

Consolidated income account for six months ended June 30, compares as follows:

	1932	*1931*
Gross sales	$4,298,620	$4,949,985
Freight and handling	382,764	443,668
Net sales	$3,915,856	$4,506,317
Cost and expenses	2,524,201	3,075,111
Operating profit	$1,391,655	$1,431,206
Other income	11,960	26,362
Total income	$1,403,615	$1,457,568
Losses of minor sub & exp of pat co	.....	6,076
Depreciation	156,872	148,400
Federal taxes, etc	186,000	118,000
Net income	$1,060,743	$1,185,092
Dividends	729,844	547,383
Surplus	$330,899	$637,709

International Salt and subsidiaries report for six months ended June 30, net profit of $174,517 after interest, depletion, depreciation and federal taxes, equivalent to 73 cents a share on 240,000 no-par shares of capital stock, comparing with $353,436 or $1.47 a share in first half of 1931.

The decrease in 1932 earnings is chiefly attributed to shrinkage in production of industrial tonnage, due to lessened volume of business of customers and corresponding curtailment of requirements for our products, officials stated. In the past the greater portion of the year's earnings invariably has been earned in the second half of the year.



Highest Purity plus 100% Service

A Steady Growth for YOUR Profit

THE Warner Chemical Company more than fifty years ago recognized the need of affording technical aid for the problems of their customers. In the little original plant the control and research departments played an important role.

Leadership in Service, Prestige and Quality of Product has been constantly maintained.

Today Warner and Warner customers are reaping the rewards of Highest Standards set nearly half a century ago.

The WARNER CHEMICAL Co.

PIONEER PRODUCERS 1886

CHRYSLER BUILDING — NEW YORK CITY

Manufacturers of Industrial Chemicals and Distributors for Westvaco Chlorine Products, Inc.

The Industry's Stocks

1932 July Last	1932 High	1932 Low	1931 High	1931 Low	Sales In July	During 1932	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1931	1930
							NEW YORK STOCK EXCHANGE					
41⅞	41⅞	30⅞	62⅛	30⅞*	109⅛	47⅛	146,400	637,700	Air Reduction	No	841,288	$3.00	4.54	6.32
58⅜	58⅜	42⅛	87⅛	42⅛*	182⅛	64	443,200	2,922,400	Allied Chem. & Dye	No	2,401,000	6.00	6.74	9.77
109⅛	110¼	98½	119	96½	133½	100	4,600	17,700	7% cum. pfd.	100	393,000	7.00		
6	6	3⅛	7½	3½	29⅜	5⅛	4,500	21,600	Amer. Agric. Chem.	100	333,000		Yr. Je. '30	Nil
16¼	16¼	12⅛	16⅛†	11⅛	14⅛	5	26,900	309,300	Amer. Com. Alc. (new)	20	375,000			d1.27
33½	34½	25	51⅜	25			19,600	138,535	American Home Products	No	611,000	.42		
12½	13	6¼	18⅛	5¼	58⅛	17⅛	56,600	378,100	Amer. Smelt. & Refin.	No	1,828,314		1.75	3.77
38⅛	39⅛	22	85	22	138⅛	75	6,600	23,400	7% cum. pfd.	100	500,000			
...	...	...	...	...	4½			76,200	Amer. Solvents & Chem	No	503,000			d2.86
11	11	8½	17	7	18	10½	4,000	26,200	Archer Dan. Midland	No	550,000	1.00	Yr. Aug. '30	1.68
⅜	⅜	⅜	1⅛	⅜			35,400	169,400	Armour & Co. (Del.)	No	50,000,000			
12⅛	12⅛	7½	25⅛	7⅛*	54	18	4,600	22,000	Atlas Powder Co.	No	261,438	1.00	.59	2.67
64⅛	65	45½	79⅛	45½*	99⅛	77½	490	4,560	6% cum. pfd.	100	96,000	6.00		
2⅜	3	1⅜	5	1⅜			2,400	29,200	Celanese Corp. of America	No	1,000,000			
2⅛	2⅛	1	3⅜	1	7⅛	2⅛	800	15,300	Certain-Teed Products	No	400,000			d7.61
8⅛	8⅛	8⅛	15½	8	25⅜	8⅛	100	1,300	7% cum. pfd.	100	63,000			
13⅛	13½	11	31½	11*	50½	24	17,300	168,500	Colgate-Palmolive-Peet	No	2,000,000	2.50		3.76
24	24⅛	15½	41⅛	13½	111⅛	32	71,800	382,600	Columbian Carbon	No	538,420	2.00	3.02	5.04
7⅜	7½	4⅜	10½	1⅜	21½	6⅜	115,900	740,100	Comm. Solvents	No	2,530,000	.60	.83	1.07
35⅞	36⅛	24⅛	47⅜	24⅛*	86⅜	36½	17,700	444,600	Corn Products	25	2,530,000	3.00	3.54	4.82
124½	125	107½	129½	99½	152½	116	1,480	6,300	7% cum. pfd.	100	250,000	7.00		
3⅜	4	1⅞	5½	1½	23	3½	10,100	75,700	Davison Chem. Co.	No	504,000		Yr. Je. '30	4.00
7⅛	8	7	13¼	6½	19½	8⅛	800	5,100	Devoe & Raynolds "A"	No	160,000			2.24
67½	67½	63	95	63*	109	100	110	290	7% cum. 1st pfd.	100	16,000	7.00		
32⅛	34	25¼	57	23			180,300	1,003,900	Drug, Inc.	No	3,501,000	4.00		
28⅞	29⅜	22⅛	59⅜	22⅛*	107	50⅜	507,664	3,758,464	DuPont de Nemours	20	11,008,512	3.00	4.29	4.67
88⅛	88⅜	85½	105	80⅜	185⅛	91⅛	9,200	36,200	6% cum. deb.	100	1,098,831	6.00		
44⅛	45⅜	35⅛	87⅞	35⅛*	185⅛	77	162,700	992,900	Eastman Kodak	No	2,261,000	5.00	5.78	8.84
110⅛	111⅛	104⅜	119	99	135	103	380	1,605	6% cum. pfd.	100	62,000	6.00		
17⅜	17½	10⅛	19½	10	43⅛	13⅛	45,300	225,125	Freeport Texas Co.	No	730,000	2.00	3.26	w4.77
4⅛	4⅜	3⅜	7	3⅛*	16⅛	4⅛	3,100	45,400	Glidden Co.	No	695,000		Yr. Oct. '30	Nil
39⅜	39⅞	36⅞	54	35	80	40	310	1,060	7% cum. prior pref.	100	74,000	7.00	Yr. Oct. '30	Nil
14⅛	15½	14⅛	28⅛	14½*	43⅛	13⅛	2,000	7,900	Hercules Powder Co.	No	606,234	2.00	1.04	2.61
79	79	73	94⅛	70½	119⅜	95	110	2,660	7% cum. pfd.	100	114,241	7.00		
14⅛	15	7⅛	38⅛	7⅛*	86	21	13,100	173,900	Industrial Rayon	No	200,000	2.00		7.74
⅜	⅜	⅜	1½	⅛	5⅛	1	100	10,800	Intern. Agric.	No	450,000		Yr. Je. '30	1.68
5	5	5	7⅛	3⅛	51⅛	4⅛	800	4,800	7% cum. prior pfd.	100	100,000	7.00	Yr. Je. '30	14.58
⅛	⅛	⅛	1⅛	⅛			6,500	97,400	Intern. Combustion	No	1,049,513			
6½	6⅜	3⅞	9⅛	3½	20½	7	157,400	1,192,500	Intern. Nickel	No	14,584,000		.22	.67
12½	13	10½	23½	9¼	42	18	2,200	38,600	Intern. Salt	No	240,000	1.50		
8⅜	8½	8	10	8	16½	9	200	14,400	Kellogg (Spencer)	No	598,000	.60		h1.14
⅛	⅛	116	9⅛	1/16			29,130	3,799,130	Kreuger & Toll					
33⅛	34½	26	56⅛	25			21,900	337,800	Lambert	No	748,996	8.00		
14⅛	14⅛	8⅛	24⅛	6			4,600	69,600	Lehn & Fink	No	419,166	2.20	2.61	
13	13⅞	10½	22	10⅛	55⅛	13⅛	10,700	71,100	Liquid Carbonic Corp.	No	342,000	1.00	2.96	5.22
2⅜	2⅜	1⅜	5⅛	1⅛	17	3⅜	6,800	92,400	McKesson & Robbins	No	1,073,000	1.00		.96
6½	6⅜	4	23	3⅛	37⅜	16	6,000	38,980	conv. 7% cum. pref.	50	428,180	3.50		
9⅛	9⅞	9⅛	15⅛	9⅛	25	13	400	10,100	MacAndrews & Forbes	No	340,000	1.00	1.94	2.61
13⅛	13⅞	9⅛	20⅛	9	31⅛	12	7,600	61,300	Mathieson Alkali	No	650,426	1.50	1.88	2.96
95	95	95	118	89¼	125⅛	106½	30	1,240	7% cum. pfd.	100	24,610	7.00		
21⅛	21⅜	15⅞	30⅜	14	29	16½	4,900	69,900	Monsanto Chem.	No	416,000	1.25	2.98	1.73
21⅛	22⅛	17⅛	24⅛	13	36⅜	16	48,800	203,500	National Dist. Prod. cts. (new)	No	252,000	2.00	—	1.23
66	66	52	92	52*	132	78⅛	1,800	19,100	National Lead	100	310,000	5.00		7.58
94⅛	96	87	125	87*	143	111	2,340	10,968	7% cum. "A" pfd.	100	244,000	7.00		
61⅛	73	61	105	61*	120	102	390	3,290	6% cum. "B" pfd.	100	103,000	6.00		
21⅛	21⅞	16⅜	32⅜	16	46⅛	22	7,000	69,200	Penick & Ford	No	425,000	1.00		4.01
26⅞	27	19⅛	42⅜	19⅛*	71⅛	36⅜	82,600	491,400	Procter & Gamble	No	6,410,000	2.00	Yr. Je. '30	3.36
25⅛	25⅜	17⅛	27⅛	16⅛	51⅛	23⅛	132,900	748,400	Standard Oil, Calif.	No	12,846,000	2.00		2.88
30⅛	30⅛	23⅛	31⅛	19⅛	52⅛	26	391,269	2,882,969	Standard Oil, N. J.	25	25,419,000	1.00		1.65
10⅛	10⅞	6⅛	10⅜	5⅛	26	8⅜	179,300	1,274,000	Socony-Vacuum	25	17,809,000	.80		.92
1⅛	1⅛	1⅛	2⅜	1	9⅛	2	1,000	24,400	Tenn. Corporation	No	857,000	1.00		1.21
18⅛	18⅛	12	26⅜	12	55¼	19⅛	78,500	442,100	Texas Gulf Sulphur	No	2,540,000	2.00	3.52	5.50
20⅛	20⅛	16	36⅜	15⅛	72	27⅛	312,396	2,002,796	Union Carbide & Carb.	No	9,001,000	1.20	2.00	3.12
11	11	8⅛	14	6⅛	28⅛	6⅛	4,400	57,500	United Carbon Co.	No	398,000		—	1.43
20⅛	20⅛	15	31⅛	13⅛	77⅛	20⅛	79,400	896,400	U. S. Ind. Alc. Co.	No	373,846		—	z2.96
11⅛	11⅛	6⅛	18⅛	5⅛	76⅛	11	51,500	1,017,900	Vanadium Corp. of Amer.	No	378,367			2.95
1	1	⅜	1	⅜	3⅛	⅜	3,700	863,700	Virginia Caro. Chem.	No	487,000		Yr. Je. '30	Nil
6	6⅛	4⅛	6⅛	⅜	17	2⅛	2,000	12,500	6% cum. part. pfd.	100	213,000		Yr. Je. '30	2.63
48⅛	48⅛	33	48⅛†	9	72	35	2,900	12,200	7% cum. prior pfd.	100	145,000		Yr. Je. '30	11.96
6⅛	6⅛	4⅞	12⅛	3⅛	40	7⅛	4,800	49,350	Westvaco Chlorine Prod.	No		1.00	1.79	2.51

h 11 mos. ending Aug. 30

w 13 mos.

z Before inventory adjustment

*New Low

†New High

									NEW YORK CURB					
4⅛	4⅛	4⅛	6⅞	4⅛	8⅛	5	100	2,800	Acetol Prod. conv. "A"	No	60,000			
⅜	⅜	⅜	3	⅜	19⅛	1⅛	200	9,700	Agfa Ansco Corp.	No	300,000			
40⅛	44⅛	22⅛	61⅛	22	224	48	34,500	105,300	Aluminum Amer.	No	1,473,000			z1.93
42⅛	44	33⅛	67⅞	33⅛*	109⅛	56⅛	4,910	18,360	6% cum. pfd.	100	1,473,000	3.00	2.66	
3⅛	3⅛	1⅛	5⅛	1⅛	12⅛	2⅛	30,100	334,020	Amer. Cyanamid "B"	No	2,404,000		.21	
⅛	⅛	⅛	⅜	⅛	15	⅛	600	31,100	Anglo-Chilean Nitrate	No	1,757,000		Yr. Je. '30	Nil
...	...	...	1⅛	⅛	4	⅛		1,200	Assoc. Rayon Corp.	No	1,200,000		Yr. Je. '30	1.87
...	...	...	...	...	60	32⅛			conv. 6% cum. pfd.	100	200,000	6.00		
...	⅛	⅛	1⅛	⅛*	2⅛	⅛	400	10,100	Brit. Celanese Am. Rcts.	2.43	2,806,000			
8	8	8	25	8*	81⅛	16⅛	50	3,075	Celanese 7% cum. part. 1st pfd.	100	148,000	7.00		
17	17	17	42	17*	65	25	100	4,225	" 7% cum. prior pfd.	100	115,000	7.00		
...	...	...	3	1⅛	...	...		1,650	Celluloid Corp.	No	195,000			
4⅛	4⅛	4⅛	5⅛	4⅛	9	5⅛	700	1,200	Courtaulds, Ltd.	1£				
...	23	21⅛	35⅜	21⅛*	51	30⅛	300	2,600	Dow Chemical	No	630,000	2.00		3.44
⅜	⅜	⅜	⅜				800		Duval Texas Sulphur	No	500,000			
...	...	...	8⅛	5⅛	13	6⅛		2,200	Heyden Chemical Corp.	10	150,000	1.00		
...	...	...	2⅛	2⅛	3⅛	2⅛		200	Imperial Chem. Ind.	1£			1.21	
...	14⅛	11⅛	19	11⅛			3,700		Parke, Davis	No	5,000,000	1.00		
...	10	9	19	9			1,300		Pratt & Lambert	No	375,000	1.00		
10⅛	12⅛	8⅛	12⅛†	6⅛	60	20	5,900		Shawinigan W. & P.	No	2,178,000	1.00		

1932 July Last	1932 July High	1932 July Low	1932 High	1932 Low	1931 High	1931 Low	Sales In July	Sales During 1932	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1931	Earnings $-per share-$ 1930
20	20	20	34½	20*	66½	34½	150	3,500	Sherwin-Williams Co.	25	636,000	2.00	Yr. Aug. '30	4.14
¾	¾	¾	1½	½	12	⅝	900	20,700	Silica Gel Corp.	No	600,000			
21¾	22¼	17½	22½†	13¼	38½	13½	120,300	543,680	Standard Oil Ind.	25	16,851,000	1.00		2.73
12	12¼	9⅝	18⅛	7	30⅜	14½	24,200	191,350	Swift & Co.	25	6,000,000	1.00		2.08
...	...	...	5¼	1	16	1½		42,000	Tubize "B"	No	600,000	10.00		
									United Chemicals					
...	...	...	16¼	11½	...	...		2,600	$3 cum. part. pfd.	No	115,000	3.00		
									CLEVELAND					
...	...	...	27	27	...	...		50	Cleve-Cliffs Iron $5 pfd.	No	498,000	5.00	—	11.42
...	...	...	43	35					Cliffs Corp. cts dep.	No	810,000	1.00		
...	27	21½	36	21½*	51½	30	661	6,839	Dow Chemical Co.	No	630,000	2.00		3.44
88	88	88	100	88*			25		Dow Chemical Co., pfd.	100	3,000,000	7.00		
100	100	100	120	100			50		National Carbon, pfd.	100	5,600,000	7.00		
21	22¼	19½	35	19½*	68½	33⅞	993	13,654	Sherwin-Williams Co.	25	636,000	2.00	Yr. Aug. '30	4.14
									CHICAGO					
22½	22½	19¼	31⅜	18½	39⅞	26½	300	5,500	Abbott Labs.	No	145,000	2.50		3.32
2	2	1	5	1*	5½	3	120	1,420	Monroe Chem.	No	126,000		1.21	1.09
...	19¼	19	32½	19*	33	24	150	1,590	$3.50 cum. pref.	No	30,000	3.50		
11⅞	13	9⅛	19	7	30½	16½	33,950	335,400	Swift & Co.	25	6,000,000	1.00		2.08
									CINCINNATI					
26½	27	20¼	42¼	20¼*	71	36⅞	15,755	217,710	Procter & Gamble	No	6,410,000	2.40	Yr. Je. '30	3.36
									PHILADELPHIA					
29⅛	30	25½	35	19⅛	75	37¼	137	562	Pennsylvania Salt	50	150,000	3.00	Yr. Je. '30	7.97
									PITTSBURGH					
...	35	32½	61	30			315		Koppers Gas & Coke, pfd.	100	50,000,000	6.00		
13	13	12¼	20	12¼*			510		Pittsburgh Plate Glass	25	65,000,000	2.00		
									SAN FRANCISCO					
14	14	13	15	11⅛			438		Clorox Chemical "A"	No	100,000			
11	11	7¼	25½	5			920		Paraffine Co.	No	700,000	2.00		
									TORONTO					
1⅛	1⅛	1⅛	1⅛	¾			330		Can. Industrial Alcohol "A"	No	1,000,000			

The Industry's Bonds

1932 July Last	1932 July High	1932 July Low	1932 High	1932 Low	1931 High	1931 Low	Sales In July	Sales During 1932	ISSUE	Date Due	Int. %	Int. Period	Out-standing $
									NEW YORK STOCK EXCHANGE				
70	70	62	80	62*	99	69½	68	187	Amer. Cyan. deb. 5s.	1942	5	A. O.	4,554,000
70	70½	60½	70½	54½	102	52	339	2,038	Amer. I. G. Chem. conv. 5½s.	1949	5½	M. N.	29,933,000
82½	82½	73½	101½	72	104½	85½	311	2,024	Am. Smelt & Ref. 1st. 5s. "A"	1947	5	A. O.	36,578,000
...	5	2½	12½	1	63½	7½	13	324	Anglo-Chilean s. f. deb. 7s.	1945	7	M. N.	14,600,000
97½	98	93½	98*	85½	103	89	102	506	Atlantic Refin. deb. 5s.	1937	5	J. J.	14,000,000
40	40	35	60	30⅜	104	59	16	124	By-Products Coke Corp. 1st 5½s "A"	1945	5½	M. N.	6,629,000
103	103	102½	103¾	100⅜	105⅜	100	3	54	Corn Prod. Refin. 1st s. f. 5s.	1934	5	M. N.	1,822,000
40	40	36	46⅞	32			2		Int. Agric. Corp. 1st coll. tr. stamped to 1942	1942	5½		
6½	6½	⅛	14½	⅛	75½	6	372	2,036	Lautaro Nitrate conv. 6s.	1954	6	J. J.	32,000,000
36½	36⅞	25½	60	25½*			603		McKesson & Robbins deb. 5½s	1950	5½	M. N.	21,686,000
...	77	76	82⅜	68			6		Montecatini Min. & Agric. deb 7s with warrants	1937	7	J. J.	8,188,000
70⅜	72	60½	76	60½*	96	67½	128	719	Pure Oil s. f. 5½% notes	1937	5½	F. A.	17,500,000
31	31	25½	30	17			73		Ruhr chemical s. f. 6s	1948	6	A. O.	3,578,000
81	82	79	89	66	103	80	53	673	Solvay Am. Invest. 5% notes	1942	5	M. S.	15,000,000
102½	102⅞	101½	102⅞†	98⅜	105½	98½	668	6,234	Standard Oil, N. J. deb. 5s.	1946	5	F. A.	120,000,000
91½	102⅞	83½	102⅞†	82	106½	85	383	1,783	Standard Oil, N. Y. deb. 4½s.	1951	4½	J. D.	50,000,000
45	45	43	83	39	99	45	3	411	Tenn. Corporation deb. 6s. "B"	1944	6	M. S.	3,308,000
42⅞	44	31	75	30			275		Vanadium Corp. conv. 5s.	1941	5	A. O.	5,000,000
									NEW YORK CURB				
90½	90½	81½	90½†	81½*	105½	93½	183,000	1,777,000	Aluminum Co., s. f. deb. 5s.	1952	5	M. S.	37,115,000
60	60	45	74	45*	104¼	66	77,000	545,000	Aluminum Ltd., 5s.	1948	5	J. J.	20,000,000
22½	22½	16	22½†	15	56	10	5,000	65,000	Amer. Solv. & Chem. 6½s.	1936	6½	M. S.	1,737,000
29	30	23	40½	19			35,000		Associated Rayon 5s.	1950	5	J. D.	10,000,000
21	26¼	21	25	21*	43	29	10,000	106,000	General Rayon 6s. "A"	1948	6	J. D.	5,085,000
...	...	...	20	10					General Ind. Alcohol 6½s.	1944	6½	M. N.	2,219,000
71½	90	69½	93	69			130,000		Glidden Co. 5½s.	1935	5½	J. D.	6,000,000
96½	97	94½	97†	90	103½	40½	136,000	1,336,000	Gulf Oil, 5s.	1937	5	J. D.	30,414,000
94	94	90	95½	83	104	74	151,000	1,198,000	Sinking Fund deb. 5s.	1947	5	F. A.	35,000,000
66⅜	66⅜	56½	88	46	102½	66	104,000	1,351,000	Koppers G. & C. deb. 5s.	1947	5	J. D.	23,050,000
...	100½	99	104¼	96½			129,000		Proctor & Gamble 4½s.	1947	4½	J. J.	10,700,000
64½	67	55½	76	52½	98⅜	56	384,000	1,813,000	Shawinigan W. & P. 4½s. "A"	1967	4½	A. O.	35,000,000
...	65½	55¼	76	53½	98⅜	58	153,000	720,000	4½s., series "B"	1968	4½	M. N.	16,108,000
...	25	24	40	24*			2,000		Silica Gel Corp. 6½s.	1932	6½	A. O.	1,700,000
100½	101	96½	101†	92½	104	99⅞	105,000	912,000	Swift & Co., 5s.	1944	5	J. J.	22,916,000
...	102	100½	102	99	104½	95	28,000	608,000	Westvaco Chlorine Prod. 5½s	1937	5½	M. S.	1,992,000

*New Low
†New High

Chemical Exports and Imports

U. S. Chemical Export Figures for May

ARTICLES, AND COUNTRIES TO WHICH EXPORTED	UNIT OF QUANTITY	MAY—				FIVE MONTHS ENDING MAY—			
		1931		1932		1931		1932	
		Quantity	*Value*	*Quantity*	*Value*	*Quantity*	*Value*	*Quantity*	*Value*
GROUP 8.—CHEMICALS AND RELATED PRODUCTS			$9,152,237		$6,087,846		$46,656,981		$31,287,206
A. COAL-TAR PRODUCTS			723,876		691,842		4,509,293		3,753,532
Benzol	Gal.	639,171	103,880	8,554	2,265	7,417,969	1,387,192	1,576,139	321,258
Crude coal tar	Bbl.	8,344	26,388	17,874	49,099	21,245	68,161	124,009	293,490
Coal-tar pitch	Ton	1,469	17,277	13,870	135,935	9,747	101,772	77,101	744,918
Creosote oil	Gal.	184,883	27,304	7,323	1,118	780,661	109,221	26,801	5,527
Coal-tar colors, dyes, stains, and color lakes	Lb.	1,781,508	462,071	1,343,946	369,903	11,257,631	2,484,475	7,275,170	1,920,375
Other coal-tar products, exclusive of medicinals	Lb.	704,970	86,956	3,920,646	133,522	3,544,425	358,472	10,381,788	467,964
C. INDUSTRIAL CHEMICAL SPECIALTIES			1,332,330		969,331		6,403,751		4,361,069
Nicotine sulphate (40% basis)	Lb.	20,934	16,803	23,882	14,033	204,973	161,230	100,863	68,157
Lead arsenate	Lb.	67,366	6,216	102,437	10,226	947,658	99,394	507,028	50,733
Calcium arsenate	Lb.	102,112	5,330	119,087	5,614	868,308	45,899	1,158,435	48,383
Other agricultural insecticides, fungicides, and similar preparations and materials	Lb.	776,220	105,789	1,049,886	122,319	3,858,962	391,675	3,623,494	314,237
Household insecticides and exterminators	Lb.	1,231,876	366,452			4,393,152	1,346,251		
Liquid	Lb.			244,463	81,760			1,140,894	331,097
Powdered or paste	Lb.			67,785	20,018			261,830	91,269
Household disinfectants, deodorants, germicides, and similar preparations	Lb.	257,239	34,130	162,091	11,699	1,198,053	157,186	683,482	65,313
Baking powder	Lb.	303,137	82,173	226,162	52,541	1,750,295	515,401	1,109,836	268,204
D. INDUSTRIAL CHEMICALS			1,968,576		1,506,925		8,993,662		6,836,018
Acids and anhydrides—									
Organic (exclusive of coal-tar acids)	Lb.	36,696	9,310	24,597	4,954	206,793	41,742	183,944	30,580
Inorganic—									
Nitric	Lb.	185,752	11,414	25,621	2,685	531,693	35,184	105,657	12,272
Sulphuric	Lb.	403,298	5,845	390,615	4,617	1,593,995	29,799	1,439,555	22,560
Hydrochloric (muriatic)	Lb.	177,651	3,991	784,581	12,699	2,736,868	44,519	4,787,985	68,589
Boric (boracic)	Lb.	533,007	26,609	769,571	28,258	1,530,746	76,698	1,908,797	81,155
Other inorganic acids and anhydrides	Lb.	325,876	20,903	265,145	12,201	1,250,397	103,773	2,796,233	103,859
Methanol	Gal.	52,048	$20,797	44,378	$18,038	200,485	$89,092	246,381	$105,782
Glycerol (glycerin)	Lb.	46,533	5,669	17,539	1,963	148,551	19,552	108,300	12,268
Butanol (butyl alcohol)	Lb.	39,129	5,130	114,573	8,864	534,438	68,097	556,277	54,496
Other alcohols	Lb.	32,438	3,876	128,546	11,331	891,847	68,049	517,582	55,833
Acetone	Lb.	727,252	45,272	387,995	27,667	1,624,726	123,606	2,316,474	165,634
Carbon tetrachloride	Lb.	32,251	1,914	59,580	2,909	174,771	10,235	405,938	19,912
Carbon bisulphide	Lb.	181,425	11,439	191,950	8,571	679,456	45,902	1,254,956	66,911
Formaldehyde (formalin)	Lb.	334,171	18,352	184,213	8,252	1,388,570	79,250	1,277,252	61,580
Ethylene compounds	Lb.	53,967	8,457	2,119	504	236,098	42,854	140,223	21,620
Citrate of lime	Lb.	441,041	55,889	107,374	7,500	1,972,145	252,682	2,749,966	235,375
Other synthetic organic products	Lb.	227,097	61,925	197,968	38,636	874,532	167,917	1,253,136	208,620
Nitro or aceto cellulose solutions, collodion, etc	Lb.	243,190	49,376	164,893	26,310	1,049,698	250,529	746,451	137,935
Ammonium compounds (except sulphate, phosphate, and anhydrous ammonia)	Lb.	219,516	11,178	205,383	5,201	623,968	38,696	405,673	19,137
Aluminum sulphate	Lb.	3,794,757	39,752	3,756,751	41,268	19,806,272	222,186	17,516,393	187,307
Other aluminum compounds	Lb.	197,586	20,271	27,906	2,778	940,795	93,655	532,111	48,628
Calcium compounds—									
Carbide	Lb.	374,816	14,397	131,422	5,417	1,349,601	58,589	1,172,734	48,092
Chlorinated lime (bleaching powder)	Lb.	154,883	5,071	313,051	8,755	565,569	23,394	1,052,743	28,545
Chloride	Lb.	17,275,300	197,562	15,329,354	160,524	27,386,271	315,510	20,294,826	214,940
Other, except arsenate, cyanide, and citrate	Lb.	264,958	12,109	104,241	6,548	730,369	35,610	536,189	29,934
Copper sulphate (blue vitriol)	Lb.	309,423	12,155	392,840	11,717	3,766,855	155,929	1,948,358	57,791
Hydrogen peroxide (or dioxide)	Lb.	132,761	22,583	45,840	4,808	653,063	113,794	235,461	32,171
Potassium compounds (not fertilizers)	Lb.	252,659	34,775	188,778	22,394	920,414	150,494	825,594	121,035
Sodium compounds	Lb.	50,329,444	936,453	43,401,485	836,446	219,024,424	4,460,595	183,180,478	3,535,682
Bichromate and chromate	Lb.	434,552	29,492	717,232	37,157	1,632,103	108,438	2,731,710	147,209
Cyanide	Lb.	37,723	5,419	64,900	4,846	439,307	66,350	339,493	43,394
Borate (borax)	Lb.	16,296,842	296,452	24,318,238	325,380	65,979,500	1,394,477	85,813,712	1,412,546
Silicate (water glass)	Lb.	6,407,619	49,810	4,515,385	37,034	24,358,193	215,441	23,114,785	194,132
Soda ash	Lb.	6,982,168	102,467	2,590,001	46,592	28,427,217	437,816	10,603,436	187,119
Sal soda	Lb.	818,479	10,799	433,543	6,758	4,046,895	53,609	2,637,394	39,363
Bicarbonate (acid soda or baking soda)	Lb.	1,247,901	23,175	996,621	20,944	7,661,831	140,307	6,235,119	115,397
Sulphate	Lb.	503,840	4,764	278,118	2,213	3,829,265	34,951	1,063,829	10,276
Bisulphate (niter cake)	Lb.	4,198,185	23,584	108,287	1,529	15,297,316	89,336	485,107	4,626
Hydroxide (caustic soda)	Lb.	12,142,174	325,825	8,345,709	303,961	61,106,918	1,651,826	45,026,929	1,147,625
Sulphide	Lb.	20,514	971	15,132	544	411,764	15,266	177,639	6,434
Fluorides	Lb.	87,531	8,798	1,525	187	101,306	9,925	46,644	3,933
Sodium phosphate (mono, di, or tri)	Lb.	653,051	19,044	548,344	16,094	2,532,406	80,272	2,608,312	81,524
Other sodium compounds	Lb.	498,865	35,853	468,450	33,207	3,200,355	162,581	2,296,369	142,104
Tin compounds	Lb.	101,625	19,002	87,722	12,123	354,947	67,564	312,170	48,682
Zinc compounds	Lb.	344,546	14,005	46,427	5,532	1,090,455	45,760	299,373	21,850
Gases, compressed, liquefied, and solidified—									
Ammonia, anhydrous	Lb.	152,032	20,638	127,770	16,112	1,188,558	131,756	607,233	83,092
Chlorine	Lb.	1,206,831	28,195	456,520	11,842	3,909,828	118,540	3,229,650	85,874
Other gases, n. e. s.	Lb.	155,462	23,372	144,768	19,441	1,009,730	132,600	953,068	124,092
Other industrial chemicals			190,890		110,060		1,279,510		684,185
E. PIGMENTS, PAINTS, AND VARNISHES			1,466,459		878,774		7,059,541		4,647,636
Mineral earth pigments—									
Ocher, umber, sienna, and other forms of iron oxide for paints	Lb.	1,355,835	37,317	500,211	16,455	4,632,328	127,514	3,142,829	102,468
Other mineral-earth pigments whiting, barytes, etc.	Lb.	1,705,124	12,130	634,359	8,059	6,157,772	77,623	3,578,211	43,384

ADVERTISEMENTS — *Each article on this page is a paid advertisement.*

SOLVENT NEWS

AUGUST ★ A Monthly Series of Articles for Chemists and Executives of the Solvent-Consuming Industries ★ 1932

OUTLOOK IMPROVED FOR PRODUCTION OF SOLVENTS

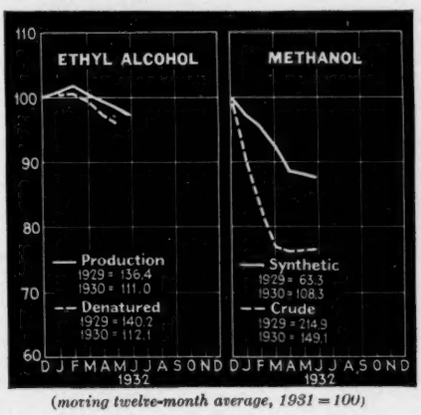
With important consuming industries working into a more favorable position and with seasonal factors expected to exert their usual influence, some expansion in production of solvents is forecast for the remainder of the year. In the case of industrial alcohol, not only is a more active buying period normally found in the second half of the year, but the present statistical situation points to a less-than-usual supply in the hands of both producers and consumers.

Low Stocks

Consumers, for some time, have held commitments close to actual requirements and in consequence are carrying very small stocks.

Latest available government figures for production of denatured ethyl alcohol cover the first six months of this year, and for that period show a reduction of more than 7%, compared with the corresponding months of 1931.

Stocks of denatured alcohol at denaturing plants more than reflect this curtailment in production, being 30% off the first six months of 1931.



(moving twelve-month average, 1931 = 100)

CURRENT PRODUCTION

Ethyl Alcohol 1000 pr. gal.		1932	1931
Total Produced	Jan.-June..	65,305	70,050
	May.....	11,578	13,120
	June.....	10,500	13,111
Total Denatured	Jan.-May..	37,118	44,001
	April.....	6,700	10,541
	May.....	8,244	10,288
Methanol Production 1000 gal.			
Total Crude	Jan.-June..	1,439	2,224
	May.....	254	248
	June.....	162	182
Total Synthetic	Jan.-June..	3,604	4,378
	May.....	502	785
	June.....	713	654

New Denatured Figures

On the accompanying graph, index numbers for denatured alcohol are based on the amounts actually denatured each month. This is a change from previous presentations where withdrawals of ethyl alcohol for denaturation were taken as representative of denatured alcohol production. * * *

Annual production statistics for solvents and the solvent-consuming industries will no longer be reported monthly in *Solvent News*. Present tables will be confined to monthly or quarterly reports. The trend charts, enable consumers to compare instantly current production with the preceding month, the year to date, and last year. * * *

A new plant for manufacture of dimethyl sulphate is being built by du Pont, Ammonia Dept., at Belle, West Virginia. It is believed that a product of high purity will shortly be available in quantity.

SPECIALLY DENATURED ALCOHOL REGULATION

To insure uniform application of article 110 of Regulations No. 3 the Commissioner of Industrial Alcohol has instructed supervisors of permits that products employing specially denatured alcohol are to be made from 190° proof alcohol—unless applicants state in Form 1479-A that the use of 200° proof alcohol is desired.

LACQUER BLUSHING RESISTANCE AIDED BY ANHYDROUS SOLVENTS

The avoidance of blushing in nitrocellulose films is of vital concern to manufacturers of quality lacquers. Moisture in solvents is often the direct cause of this condition.

The use of solvents with a minimum amount of water will confer a factor of safety in lacquer formulation, and make for economy by requiring less "high boilers"—one of whose functions is to eliminate water and consequent blushing.

As lacquers dry by evaporation with resultant lowering of temperature, moisture may be deposited from the air. Anhydrous solvents tend to eliminate this moisture, or keep it within safe limits.

Anhydrous ethyl alcohol has about 5% less water than the usual commercial grade. In alcohol-type lacquers or where alcohol is employed in formulation many manufacturers have found that this difference has been sufficient to eliminate blushing of their films.

The U. S. Industrial Alcohol Co., originator of the continuous distillation process for this invaluable solvent, would welcome the opportunity of studying the problems of any manufacturer. Many other anhydrous solvents are also available, notably Solox, widely used in the furniture and shellac industries.

* * *

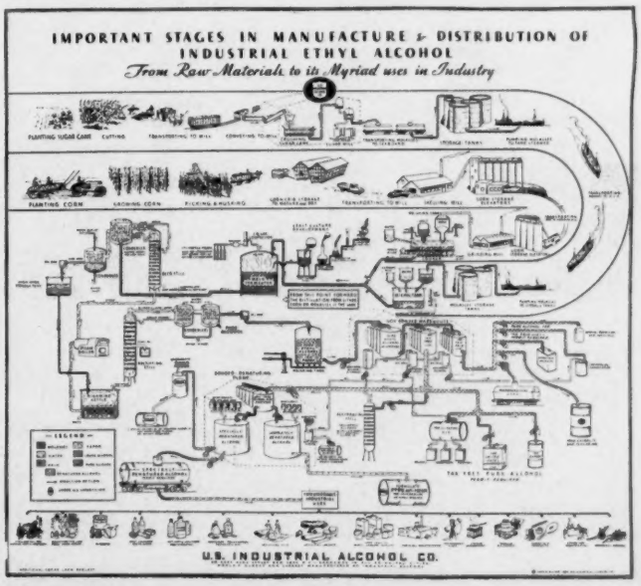
Motion Picture Screens may be satisfactorily refinished with Cellulose Acetate Solution, it is claimed. This recent development is said to cost considerably less, and takes less time than replacing the old screen.

●

Ethyl Alcohol Production, from raw materials to industrial application, is dramatically illustrated by this new flow-chart, prepared by the U. S. Industrial Alcohol Co. Beginning in cane and corn fields, through detailed fermentation and distillation operations, through the government warehouses, the alcohol is traced to its ultimate industrial uses.

Attractively finished copies of this chart, 19″ x 21″, are available free. Specially finished charts on rollers for classroom or exhibition purposes may be secured at cost from the U. S. Industrial Alcohol Co.

●


IMPORTANT STAGES IN MANUFACTURE & DISTRIBUTION OF INDUSTRIAL ETHYL ALCOHOL
From Raw Materials to its Myriad uses in Industry
U.S. INDUSTRIAL ALCOHOL CO.

FIFTEEN NEW FERMENTERS FOR BALTIMORE PLANT

Concrete evidence of confidence in the immediate future of the chemical industry is evidenced by the construction of fifteen new fermenters in the Baltimore Plant of the U. S. Industrial Alcohol Co.

Each unit is of 134,000-gallon capacity, built of copper-bearing steel. Several new features are incorporated in these new fermenters, shortly scheduled for completion.

To facilitate drainage and cleaning, their bottoms slope toward the outlet, whereas formerly flat-bottom fermenters were employed. In addition, special steam connections in their piping system make rapid and effective sterilization possible.

LACQUER EXPORTS UP

Lacquer exports during 1931 were 31% ahead of the preceding year. Pigmented lacquers accounted for 78% of the total. Argentine is our largest foreign customer.

NEW C. D. DENATURANTS

General interest has been aroused in the denaturants employed in the new completely denatured alcohol formulae. Their odor and general properties have been considerably improved over previous admixtures.

Tecsol is a wood distillation product with all of the impurities of denaturing grade methanol—without toxic properties. It is developed by Tennessee-Eastman Company chemists.

Pontol is derived from the production of synthetic methanol, through the cooperation of the du Pont Ammonia Company. It is a highly complex mixture of more than sixty different chemicals, chiefly higher secondary and tertiary alcohols.

Calorite, developed by the Standard Oil Company of California, is a straight petroleum product of high boiling point. It was substituted for alcotate, and is of less objectionable odor.

* * *

Cellophane Shoes are being made of fabric woven from thread of cellophane strips around a cotton core. It is claimed the shoes are light and durable.

33 MILLION GALLONS ALCOHOL USED ABROAD AS MOTOR FUEL

Recent months have witnessed widespread efforts to popularize alcohol-gasoline mixtures as automobile fuel in Europe. The potato distillation industry of Germany is partially subsidized by government legislation compelling a 6% admixture of ethyl alcohol with gasoline. Agricultural bodies, assisted by national defense interests, are now urging a 10-12% admixture.

Public demonstrations have been held in Paris, where the blended fuel was used in stock makes of passenger cars, without alteration of carburetor adjustment.

The new U. S. Department of Commerce Survey reveals that in 1930, foreign countries consumed 33,000,000 gallons of alcohol in motor fuels.

* * *

Automobile Production is 45% off 1931 for first six months of 1932. The relative stability of lacquer sales to this depressing influence is remarkable, observers believe. While June was only 25% off, the preceding four months' inactivity pulled the year's total drastically downward.

* * *

Synthetic Wool may be commercially produced in an idle rayon plant by a recently developed process.

SOLVENT PRICE TREND

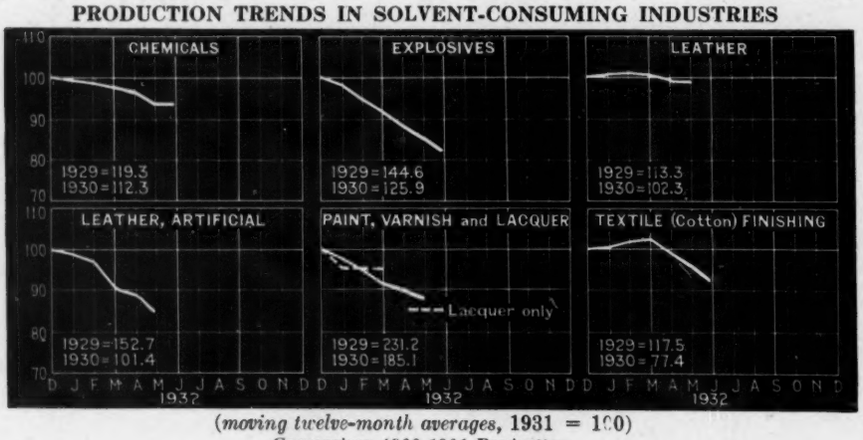
With the more important solvents maintained at established levels, price changes in the current market are of minor importance.

Methyl acetone offered an exception to the general rule in the past month with a decline of 6¢ a gallon. According to prices quoted in the *Oil, Paint & Drug Reporter*, the price index for solvents on August 1 stood at 98.32 compared with 98.47 for July 1.

* * *

Synthetic Methyl Acetone and Methyl Acetate have been announced by Carbide and Carbon Chemicals Corp.

PRODUCTION TRENDS IN SOLVENT-CONSUMING INDUSTRIES



(*moving twelve-month averages*, 1931 = 100)

Comparison 1932-1931 Production

		June	May	Jan.-June
Chemicals production index (1931=100)	1932	94.4	95.4	97.0
	1931	101.0	102.1	101.1
Leather production index (1931=100)	1932	—	97.5	96.0*
	1931	107.7	116.4	103.0
Leather Artificial pyroxylin spread, 1000 lb	1932	—	2,094	11,250*
	1931	4,001	4,060	24,424*
Explosives 1000 lb	1932	14,195	17,577	101,907
	1931	25,981	26,960	158,809
Paint, Varnish and Lacquer sales, value, 000 omitted	1932	—	$24,979	$98,824
	1931	$28,587	$33,403	$161,845
Lacquers only, 1000 gal	1932	xxx	xxx	4,753**
	1931	xxx	xxx	5,631**
Textile (cotton) **Finishing** 1000 yd	1932	40,993	43,868	395,527
	1931	57,412	67,704	444,273

*January through May only. **January through March only. xxx—Quarterly only.

ADHESIVES AND CEMENTS WIDE FIELD FOR SOLVENTS

The manufacture of adhesives is an important and highly specialized field for solvents. Many problems, both in production and application, have challenged the ingenuity of the adhesive makers in the proper selection of raw materials. Various factors influence the choice of a suitable commercial adhesive. The most important are: nature of surfaces to be cemented, primary and final adhesion, water-proofness, color, and durability.

The oldest and best known adhesives are water solutions of glue, casein, or starch. Sodium silicate is used extensively for box board and cardboard. The organic group gives excellent service under conditions of dryness, but the presence of moisture causes deterioration through fermentation and mould.

Pyroxylin Adhesives

With the advent of moisture-proofed, pyroxylin-coated wrappings, special solvents and adhesives had to be developed. These new products are mainly organic solvents or very thin nitrocellulose solutions which dry quickly, effecting a firm, clear waterproof bond.

Celluloid novelties, such as calendars, bath toys, and card cases, are assembled by means of solvents which slightly soften contacting edges, causing adhesion. Safety glass for automobiles is made in somewhat the same manner by "sandwiching" a sheet of celluloid or transparent plastic sheet between two sheets of glass.

Another type of adhesive is so-called "Household Cement" which is essentially a heavy nitrocellulose solution used in home repairs, especially for crockery. An interesting application of this type of adhesive is in stopping "runs" in silk hosiery.

Plastic wood is a mixture of celluloid scraps and wood flour. When moistened with solvent, it forms a paste for filling holes or scars in woodwork, later setting firm and strong.

Use in Shoes

Experiments are now being conducted with promising results to do away with all stitching in shoes—using cement throughout. A valuable feature of such assembling is that the joint between welt and sole is waterproof. Resoling is also done by means of cement.

* * *

Plastic Metal Solders are now available. High viscosity cotton solutions have been combined with aluminum powder, to form an excellent cement for metals, glass, wood, and vitreous materials.

* * *

A new deodorant for petroleum solvents is said to be so powerful that two pounds will deodorize a 8000-gallon tank car of cleaners naphtha.

U.S. INDUSTRIAL ALCOHOL CO.
U.S. INDUSTRIAL CHEMICAL CO., INC.

WORLD'S LARGEST PRODUCERS OF ALCOHOL DERIVED SOLVENTS

ALCOHOLS
Amyl Alcohol
Ansol
Butyl Alcohol
Ethyl Alcohol
Anhydrous—Pure and Denatured
Commercial—Pure and Denatured
Fusel Oil—Crude and Refined
Methanol
Secondary Amyl Alcohol
Secondary Butyl Alcohol
Solox

ESTER SOLVENTS
Acetic Ether
Amyl Acetate
Butyl Acetate
Ethylene Glycol Monoethylether Acetate
Diatol
Diethyl Carbonate
Estersol
Ethyl Acetate
Ethyl Lactate
Secondary Amyl Acetate
Secondary Butyl Acetate

ETHER
Ether, Ethyl—USP. and Absolute

PLASTICIZERS
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate

NITROCELLULOSE SOLUTIONS
Collodions
Cotton Solutions

CELLULOSE ACETATE
Bulk and Solutions

ORGANIC CHEMICALS
Ethyl Acetoacetate
Ethyl Chlorocarbonate
Ethyl Oxalate
Ethylene
Sodium Oxalacetate

MISCELLANEOUS SOLVENTS
Acetone
Methyl Acetone

Executive Offices: 60 East 42nd Street, New York, N. Y. Branches in all Principal Cities

U. S. Chemical Export Figures (*Continued*)

ARTICLES, AND COUNTRIES TO WHICH EXPORTED	UNIT OF QUANTITY	MAY—				FIVE MONTHS ENDING MAY—			
		1931		1932		1931		1932	
		Quantity	*Value*	*Quantity*	*Value*	*Quantity*	*Value*	*Quantity*	*Value*
Chemical pigments—									
Zinc oxide	Lb.	894,520	64,601	231,880	17,786	5,285,862	374,204	1,665,392	121,145
Lithopone	Lb.	1,297,390	55,681	546,458	24,498	4,284,805	190,650	3,698,849	156,787
Bone black and lampblack	Lb.	306,727	15,084	14,253	1,302	1,254,602	59,850	638,013	35,067
Carbon black or gas black	Lb.	9,791,933	498,826	7,244,208	360,611	37,138,682	2,145,581	37,561,772	1,813,298
Red lead litharge, and orange mineral	Lb.	256,792	18,462			3,752,245	236,886		
Red lead	Lb.			45,035	3,157			341,413	21,994
Litharge	Lb.			294,489	12,429			1,541,600	71,705
White lead	Lb.	851,068	47,854			4,782,806	276,883		
Dry	Lb.			6,700	515			1,750,494	80,668
In oil	Lb.			28,550	2,494			443,514	34,050
Other chemical pigments	Lb.	627,043	83,957	464,464	61,604	3,101,527	379,883	2,255,017	283,980
Bituminous paints, liquid and plastic			43,318		21,622		194,048		86,577
Paste paints	Lb.	611,359	68,287	154,165	20,986	1,690,318	223,291	737,655	132,853
Kalsomine or cold-water paints dry	Lb.	531,752	27,798	315,632	16,427	2,688,676	139,681	2,119,661	109,947
Nitrocellulose (pyroxylin) lacquers—									
Pigmented	Gal.	34,672	105,199	17,672	49,750	151,257	444,167	104,443	277,948
Clear	Gal.	6,856	16,216	8,867	17,837	46,207	101,057	39,499	80,550
Thinner for nitrocellulose lacquers	Gal.	27,609	32,637	15,651	17,587	142,062	175,973	91,955	104,186
Ready-mixed paints, stains, and enamels	Gal.	146,507	286,001	105,012	196,734	807,201	1,634,396	490,755	924,817
Varnishes (oil or spirit, and liquid dryers)	Gal.	31,419	50,893	21,739	27,248	168,754	263,831	130,823	158,548
Paints and varnish removers	Gal.	1,500	2,198	1,868	1,673	9,311	14,023	6,351	7,664
F. FERTILIZERS AND FERTILIZER MATERIALS	Ton	107,900	1,179,115	81,697	509,754	565,305	6,959,352	406,649	3,723,925
Nitrogenous fertilizer materials—									
Ammonium sulphate	Ton	4,194	146,799	587	13,674	52,370	1,769,013	13,030	368,776
Other nitrogenous chemical materials	Ton	2,079	91,060	2,799	100,200	25,190	1,072,309	53,787	1,536,636
Nitrogenous organic waste materials	Ton	346	5,883	719	6,568	2,451	70,197	3,388	60,724
Phosphatic fertilizer materials—									
Phosphate rock—									
High-grade hard rock	Ton	4,649	22,769	2,606	12,962	11,902	65,021	37,955	222,866
Land pebble	Ton	72,636	304,514	72,960	322,899	387,532	1,644,685	286,279	1,223,813
Superphosphate (acid phosphate)	Ton	13,533	154,261	1,260	22,037	42,347	505,668	6,888	102,727
Other phosphate materials	Ton	231	17,689	128	6,336	2,516	109,686	698	32,178
Potassic fertilizer materials—									
Potassium chloride or muriate	Ton	5,835	253,547	157	6,793	18,759	825,889	197	7,536
Other potash fertilizers	Ton	99	3,593	138	3,704	908	34,664	194	6,885
Concentrated chemical fertilizers—									
Nitrogenous phosphatic types	Ton	3,564	$149,355	239	$11,159	17,940	$734,798	3,724	$142,197
Nitrogenous phosphatic potassic types	Ton			35	1,239	94	2,979	35	1,239
Prepared fertilizer mixtures	Ton	734	29,645	69	2,183	3,296	124,443	454	18,318
G EXPLOSIVES, FUSES, ETC.			192,976		124,100		911,348		551,176

U. S. Chemical Import Figures for May

ARTICLES, AND COUNTRIES FROM WHICH IMPORTED	UNIT OF QUANTITY	MAY—				FIVE MONTHS ENDING MAY—			
		1931		1932		1931		1932	
		Quantity	*Value*	*Quantity*	*Value*	*Quantity*	*Value*	*Quantity*	*Value*
GROUP 8.—CHEMICALS AND RELATED PRODUCTS			5,794,406		4,418,635		41,252,152		22,449,046
A. COAL TAR PRODUCTS			717,044		640,242		4,649,250		3,857,963
Crude—									
Dead or creosote oil ..free	Gal.	62,828	8,584	2,566,405	247,989	15,009,960	1,503,153	12,863,211	1,175,921
All other ..free			65,198		55,168		334,228		325,547
Intermediates—									
Acids ..dut.	Lb.	300	203	91,337	5,274	363,580	22,661	396,648	105,560
All other ..dut.	Lb.	126,325	47,701	30,607	18,338	377,609	205,124	317,038	161,173
Finished products—									
Colors, dyes, stains, color acids, and color bases, n. e. s. ..dut.	Lb.	480,933	513,093	213,476	277,210	2,037,673	2,333,424	1,655,021	1,857,834
Belgium	Lb.	5,570	8,733	4,276	4,484	24,072	30,846	13,082	13,278
France	Lb.	7,843	15,167			49,381	77,304	1,799	1,880
Germany	Lb.	280,875	269,036	159,755	193,472	1,104,220	1,198,048	936,587	1,039,611
Italy	Lb.					11,278	10,814	2,182	2,754
Switzerland	Lb.	169,657	195,972	45,178	74,987	775,444	935,029	559,063	656,246
United Kingdom	Lb.	11,669	18,215	2,320	2,298	52,335	56,918	52,188	55,242
Coal-tar medicinals ..dut.	Lb.	2,366	40,729	3,432	14,946	21,691	101,426	11,227	79,068
Other finished coal tar products ..dut.	Lb.	11,540	41,536	7,179	21,317	44,931	149,234	44,809	152,860
B. MEDICINAL AND PHARMACEUTICAL PREPARATIONS			306,372		241,717		1,908,457		1,415,419
Quinine sulphate ..free	Oz.	94,488	32,530			568,784	216,116	298,708	101,452
Other quinine and other alkaloids and salts from cinchona bark ..free	Oz.	6,620	2,339			27,076	10,334	137,784	26,114
Other alkaloids, salts, and derivatives ..dut.			13,723		8,869		68,558		44,632
Antitoxins, serums, vaccines, etc., and blistering beetles ..free					120		1,909		841
Menthol ..dut.	Lb.	21,480	60,643	47,385	100,735	176,105	487,275	221,495	498,027
Santonin and salts ..free	Lb.	113	10,462	6	395	290	28,420	6	395
Other medicinals ..dut.			1,710		1,259		47,050		24,071
All other preparations, n. e. s. ..dut.			184,965		130,339		1,048,795		719,887
D. INDUSTRIAL CHEMICALS			1,543,017		1,331,995		7,774,191		6,434,288
Acetylene, butylene, ethylene, and propylene derivatives ..dut.	Lb.	46,140	6,997	45,926	4,534	167,580	28,112	142,858	14,790
Acids and anhydrides—									
Acetic or pyroligneous ..dut.	Lb.	2,022,270	98,136	957,383	54,826	8,228,950	396,669	5,325,998	299,251
Arsenious (white arsenic) ..free	Lb.	2,048,741	57,723	2,231,270	59,242	7,035,685	207,009	6,671,062	172,614
Formic ..dut.	Lb.	24,629	1,255			60,464	3,570	35,501	2,098
Oxalic ..dut.	Lb.	21,833	1,143	14,349	763	200,075	10,488	127,016	6,796
Sulphuric (oil of vitrol) ..free	Lb.	442,889	3,282	70,752	531	606,489	4,181	363,658	2,916
Tartaric ..dut.	Lb.	202,231	44,172	266,224	41,874	1,024,241	224,811	913,684	154,399
All other ..free	Lb.	900	813	6,129	269	64,207	3,740	6,229	383
..dut.	Lb.	64,928	11,600	112,639	12,959	569,804	99,933	565,250	74,017

U. S. Chemical Import Figures (*Continued*)

ARTICLES, AND COUNTRIES FROM WHICH IMPORTED	UNIT OF QUANTITY	MAY—				FIVE MONTHS ENDING MAY—			
		1931		1932		1931		1932	
GROUP 8.—CHEMICALS AND RELATED PRODUCTS—Continued.									
D. INDUSTRIAL CHEMICALS—Continued.		*Quantity*	*Value*	*Quantity*	*Value*	*Quantity*	*Value*	*Quantity*	*Value*
Alcohols, n. e. s., including fusel oil	dut.		2,141		479		4,824		3,827
Ammonium compounds, n. e. s.—									
Chloride (muriate)	dut.	Lb. 735,277	21,860	142,390	4,324	2,679,898	78,681	1,921,732	49,117
Nitrate	dut.	Lb. 686,412	19,244	681,772	15,541	3,418,834	98,899	2,598,572	65,486
All other	dut.	Lb. 53,475	2,849	12,012	508	246,282	14,010	75,944	3,671
Barium compounds	dut.	Lb. 331,949	8,798	465,700	11,217	2,786,412	62,984	861,071	21,024
Calcium compounds, n. e. s.	dut.	Lb.		78,480	3,055	206,720	8,055	128,480	4,930
Cellulose products, n. e. s.—									
Acetate	dut.	Lb. 10,643	10,489	1,102	703	18,239	20,432	1,579	1,223
All other—									
Sheets more than 3/1000 inch thick, and other forms	dut.	Lb. 13,783	21,336	21,001	16,943	65,903	93,371	68,333	47,275
Sheets and strips, more than 1 inch wide, not over 3/1000 inch thick	dut.	Lb. 4,123	2,132	61	75	25,471	12,045	12,831	9,641
Cobalt oxide	dut.	Lb. 15,000	$19,284	11,000	$11,382	86,550	$127,240	101,854	$102,078
Copper sulphate (blue vitriol)	free.	Lb. 198,858	8,043	326,919	8,688	1,139,884	46,360	2,958,348	81,231
Glycerin—									
Crude	dut.	Lb. 743,120	42,212	206,087	8,500	4,419,016	250,704	2,171,380	90,550
Refined	dut.	Lb.		119,256	8,736	570,454	49,828	658,302	45,858
Iodine, crude	free.	Lb. 30,695	110,480	33,111	110,087	152,188	561,728	127,867	429,755
Lime, chlorinated, or bleaching powder	dut.	Lb. 162,995	5,906	193,701	4,599	802,800	26,085	949,934	23,606
Magnesium compounds	dut.	Lb. 797,098	14,996	1,006,925	12,589	3,980,274	76,465	4,492,613	63,177
Potassium compounds, n. e. s.—									
Argols, tartar, and wine lees	free.	Lb. 1,790,765	161,282	1,555,060	96,873	7,601,808	714,435	6,364,794	378,269
Carbonate	dut.	Lb. 1,436,457	64,473	925,038	39,212	7,126,620	322,837	5,161,442	211,733
Chlorate and perchlorate	dut.	Lb. 996,343	34,360	1,156,936	44,551	5,828,551	206,420	4,592,207	169,475
Cream of tartar	dut.	Lb. 11,023	1,984			47,423	8,660	16,500	2,951
Cyanide	free.	Lb. 30	14	3,658	1,249	28,999	10,871	24,765	8,522
Hydroxide (caustic potash)	dut.	Lb. 766,909	40,218	316,559	17,793	3,628,379	193,894	2,317,944	122,804
Nitrate, crude (saltpeter)	free.	Ton. 1,204	74,476	3,682	197,260	7,184	361,543	11,336	592,748
Other potassium compounds, n. e. s.	dut.	Lb. 351,862	21,741	321,997	15,662	3,196,571	152,060	1,468,752	84,434
Sodium compounds, n. e. s—									
Chlorate	dut.	Lb.						500,000	18,267
Sulphate, crude (salt cake)	free.	Lb. 12,154,797	68,882	12,288,065	65,956	74,075,350	419,650	49,310,011	264,529
Cyanide	free.	Lb. 1,883,330	147,352	1,438,486	155,634	7,255,597	550,259	7,455,747	766,135
Ferrocyanide (yellow prussiate)	dut.	Lb. 45,185	3,860			677,458	58,142	179,242	15,348
Nitrate	dut.	Lb.		220	43			1,020	184
Phosphate (except pyrophosphate)	dut.	Lb. 115,742	1,686	400	52	820,804	12,062	37,774	825
Other sodium compounds, n. e. s.	free.					19,962	2,144		
	dut.		95,408		42,713		314,264		210,892
Radium salts	free.	Grain. 1	2,313	14	44,337	77	279,568	108	362,354
Other industrial chemicals	free.		129,126		82,254		763,909		677,710
	dut.		180,951		135,982		893,249		778,295
E. PIGMENTS, PAINTS, AND VARNISHES			184,125		163,089		795,221		674,861
Mineral-earth pigments—									
Iron oxide and iron hydroxide	dut.	Lb. 836,741	21,186	1,204,777	24,607	4,183,303	101,263	4,568,140	80,868
Ochers and siennas	dut.	Lb. 1,078,350	19,169	655,084	8,797	4,052,356	76,636	3,347,725	50,269
Other mineral-earth pigments	dut.		20,093		46,214		125,361		85,834
Chemical pigments—									
Lithopone and zinc pigments, n. e. s.	dut.	Lb. 1,217,912	56,023	820,046	24,022	5,005,313	204,296	5,369,161	156,708
Zinc oxide and leaded zinc oxide	dut.	Lb. 309,541	22,159	416,761	22,121	1,270,675	87,026	2,697,369	126,299
Other chemical pigments	dut.	Lb. 218,852	18,265	467,593	16,031	1,084,603	86,040	1,487,888	92,944
Paints, stains, and enamels	dut.		25,200		18,102		99,904		70,973
Varnishes	dut.	Gal. 1,331	2,030	2,433	3,195	7,846	14,695	5,959	10,966
F FERTILIZERS AND MATERIALS		Ton. 71,362	2,547,796	82,303	1,837,513	740,915	24,480,147	408,483	8,843,084
Nitrogenous—									
Ammonium sulphate	free.	Ton. 1,179	40,218	46,321	818,287	33,322	1,188,250	134,769	2,714,576
Ammonium sulphate-nitrate	free.	Ton. 354	31,039			2,255	118,778	75	3,784
Calcium cyanamide or lime nitrogen	free.	Ton. 1,658	63,776	4,581	128,814	34,152	1,109,255	32,084	788,956
Calcium nitrate	free.	Ton. 318	10,348	26	826	26,074	859,095	3,705	94,321
Guano	free.	Ton. 125	1,858			13,407	494,392	3,258	52,832
Dried blood	free.	Ton. 126	5,464	96	1,919	4,864	231,876	2,313	62,019
Sodium nitrate	free.	Ton. 34,821	1,352,436	37	1,846	336,254	12,920,263	44,307	1,315,473
Urea and calurea	free.	Ton. 672	50,163	775	59,280	3,697	298,139	2,671	200,170
Other	free.	Ton. 6,552	268,783	12,630	386,190	37,475	1,291,579	22,318	614,672
Phosphates—									
Bone ash, dust, and meal, and animal carbon fertilizers	free.	Ton. 4,578	133,405	1,737	29,244	25,341	621,205	15,376	270,645
Other phosphate materials	free.	Ton. 254	2,873	1,733	24,738	9,411	120,996	18,660	259,660
Potash fertilizers—									
Chloride, crude (muriate)	free.	Ton. 6,670	261,250	6,187	225,162	57,424	2,197,083	24,817	921,665
Kainite	free.	Ton. 807	7,395	2,476	29,783	39,977	375,019	31,851	292,699
Manure salts	free.	Ton. 5,675	69,525	1,349	17,853	66,486	960,840	46,721	588,250
Sulphate, crude	free.	Ton. 4,505	213,748	2,251	92,395	19,631	919,704	8,927	401,798
Other potash-bearing substances	free.	Ton. 49	393	16	237	273	2,110	272	2,320
Fertilizers, compounded, or chemically combined, containing nitrogen, phosphoric acid, and potash	free.	Ton. 116	5,139	30	1,898	8,768	522,037	773	42,340
All other	free.	Ton. 2,903	29,983	2,058	19,041	22,104	249,526	15,586	216,904
G. EXPLOSIVES			216,574		78,869		397,299		255,961
Powder and other explosives, n. e. s.	dut.		125,700		213		132,474		6,406
Firecrackers	dut.	Lb. 628,804	87,655	532,082	78,437	1,677,758	243,851	1,629,524	242,303
Fireworks and ammunition	dut.		3,219		219		20,974		7,252
H. SOAP AND TOILET PREPARATIONS			248,905		119,706		1,203,166		922,571
Soap—									
Castile	dut.	Lb. 169,714	17,408	95,614	7,815	1,093,864	105,079	830,684	66,912
Toilet	dut.	Lb. 110,572	32,370	118,242	24,014	562,099	151,882	435,869	108,719
All other	dut.	Lb. 83,517	12,769	69,799	6,773	607,538	68,878	678,441	54,067
Perfume materials	free.	Lb. 1,248	38,375	1,131	16,729	3,579	191,808	3,865	180,378
	dut.		71,785		29,898		340,114		280,636
Perfumery, bay rum, and toilet water	dut.		34,021		17,933		186,148		125,791
Bath salts	dut.	Lb. 4,917	1,071	2,862	395	18,522	4,150	7,919	1,356
Cosmetics, powders, creams, etc	dut.		41,106		16,149		155,107		104,712
ARTICLES IN GROUP 8, ORDINARILY DUTIABLE, IMPORTED FREE	free.		30,573		5,504		44,421		44,899

Compiled from Monthly Summary of Foreign Trade of the United States, of the Dept. of Commerce

The Trend of Prices

Business shows signs of improvement in July. Chemical Markets' Average Price for 20 representative chemicals remains unchanged; Journal of Commerce's chemical index is higher; Annalist's remains unchanged; National Fertilizer Association's fats and oils price index registers impressive gain while the indices for chemicals and drugs, fertilizer materials, and mixed fertilizers are slightly lower (July 23).

Improved sentiment prevailed in the chemical market during July. While tonnages, in most instances, were still of very modest proportions, the fact that some pickup did occur in the "usually dull summer season" was regarded in most quarters as a very healthy sign. The industry is looking more hopefully to the fall months for further signs of definite recovery.

Firmer Prices

Prices generally were firm, with one or two outstanding exceptions. The various chemical indices testify to the better tone in evidence. Those of the N.F.A. show slight losses for chemicals and drugs, fertilizer materials, and mixed fertilizers and a decided increase in fats and oils.

	Fats & Oils	*Chem. & Drugs*	*Fert. Mat.*	*M. Fert.*
July 2	35.9	87.6	67.3	71.9
July 9	38.1	87.6	67.2	71.9
July 16	40.2	87.6	67.1	71.8
July 23	40.1	87.4	67.2	71.8

The *Annalist* chemical index remained stationary during the month at 95.0; that of the *N. Y. Journal of Commerce* rose on July 5 from 80.9 to 81.5 and remained unchanged during the balance of the month.

Mercury Cartel Dissolved

Mercury and glycerine prices stood out in the declines. Dissolution of the mercury cartel forced prices down to a new low and the further accumulation of glycerine stocks brought about by the flurry in production schedules of the soap manufacturers in June resulted in a downward revision in all grades. Tartaric acid and cream of tartar continued to decline in the face of keen competition. Lead chemicals were reduced in the middle of the month to compensate for the lower prices for the metal, but rebounded near the close when the commodity markets, lead included, recovered. Sulfate of ammonia prices were increased near the end of the month when several of the domestic producers adopted a waiting policy pending the decision in Washington on sulfate dumping and the issuance of nitrate prices for the coming fertilizer year. Tin chemicals were higher.

The market was featured by a recovery in fats and oils, breaking the chain of uninterrupted declines which have given this division a particularly bad appearance for months. Rosin prices, with the exception of one or two grades, were again lower in July, while turpentine fluctuated within very narrow limits in the face of extremely light trading. Shellac grades were weak. The revival of the nitrogen cartel is expected to strengthen the price structure somewhat for nitrate and ammonium sulfate. The rise in hog prices was reflected in increases in blood and tankage. Disodium phosphate was reduced in the metropolitan area.

Better Tonnages

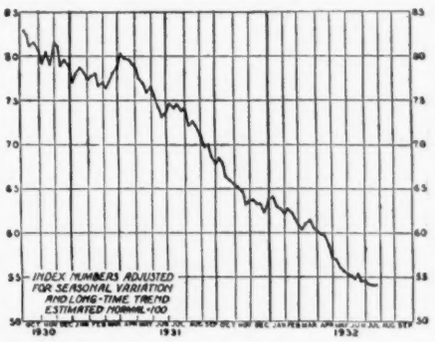
Shipments into most consuming lines were better in July than in June. The textile industry, particularly in the New England district, made noticeable gains. Further improvement is looked for in rayon. The silk dyeing and weighting centers were still untouched by the improvement, but it is only a matter of a few weeks before they will benefit by the gains made. The tanning industry was reported more active. The glass and paper industries were still unchanged in status. An improvement in lacquers, started two months ago, continued, but otherwise the paint industry is operating at very slow pace. Demand for seasonal items, such as calcium chloride and anhydrous ammonia, was good. The copper sulfate season, now drawing to a close, was considered by most manufacturers to have been fair under the circumstances.

The tone in the country is increasingly optimistic. Retail trade has improved and if this persists the wholesale lines, which up to now have been quiet, are bound to feel a better demand as orders for replacements are released. The heavy industries are still quiet but steel activity rose slightly in July and further improvement is looked for. Automobile production is holding up rather encouragingly. Commodity prices in many instances registered sizable increases in July. *Fisher's* index rose from 59.6 to 60.9 during the month; *Annalist's* from 91.1 to 92.2; *N. Y. Journal of Commerce's* from 56.3 on June 27 to 56.9 on Aug. 1.

Business Activity

The *N. Y. Times* index of business activity was lower again in July when compared with June, but in the week ending July 23, the index held at the previous week's level. It is expected that the improved sentiment will manifest itself in the various indices shortly.

Index of Business



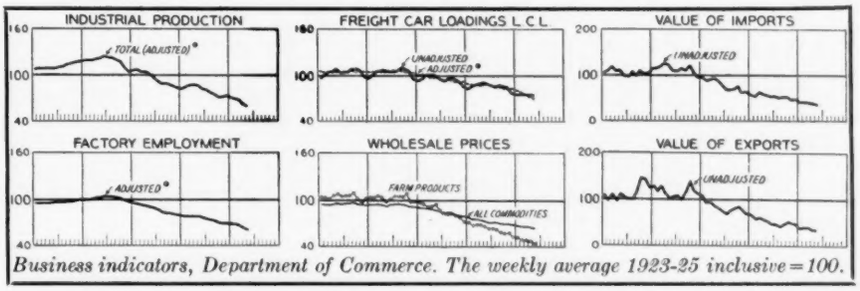
	July 23 1932	*July 16 1932*	*July 9 1932*
Freight car loadings	48.5	49.1	49.2
Steel mill activity	21.2	19.8	15.3
Elec. power production	68.6	68.3	69.0
Automobile production	50.0	50.3	53.0
Cotton cloth production	56.7	59.7	*62.0
Combined index	54.2	54.2	*54.3

*Preliminary

Indices of Business

	Latest Available Month	Previous Month	Year Ago
Automobile Production, May	185,149	148,326	317,163
†Brokers Loans, July 1	$243	$300	$1,391
*Building Contracts, June	$113,075	$146,221	$316,147
*Car Loadings, July 16	504	416	757
†Commercial Paper, June 30	$103	$111	$292
Payrolls, May	46.2	48.7	72.2
*Mail Order Sales, May	$38,718	$39,745	$50,070
Failures, Dun, June	2,688	2,788	1,993
*Merchandise Imports, June	$121,000	$112,000	$113,455
*Merchandise Exports, June	$115,000	$132,000	$187,077
Furnaces in Blast, July 1	16.1	18.6	29.0
*Steel Orders, June 30	2,034	2,177	3,479

*000 omitted. †000,000 omitted.



Business indicators, Department of Commerce. The weekly average 1923-25 inclusive = 100.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

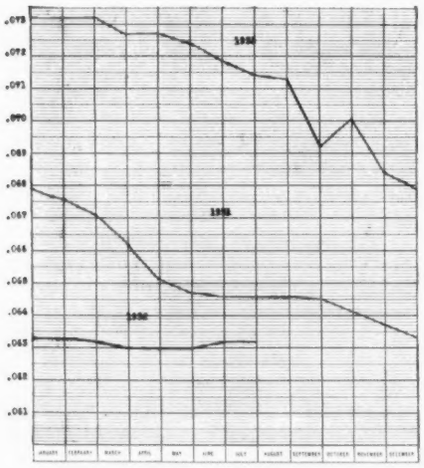
Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

Important Price Changes

Advances	July	June
Ammonium Sulfate, dom	$18.00	$17.50
Imp	18.00	17.00
Carnauba Wax, No. 3. N. C.	.12	.11½
Carn. Wax, No. 3, chalkly	.12	.11½
Linseed Cake	20.00	19.00
Linseed Meal	29.25	26.50
Tankage	1.40	1.30
Tin tetrachloride	.151	.1465
Tin crystals	.22½	.22

Declines		
Acid, tartartic	.23	.23½
Camphor, slabs	.38	.40
Carbon, black, c. l.	.0272	.03
Cream of Tartar	.17	.18
Egg Albumen	.79	.80
Yolk	.42	.43
Glycerine, c. p.	.09¾	10¼
Glycerine, dynamite	.07¼	.07½
Glycerine, soap lye	.04	.04⅛
Methyl acetone, tanks wks.	.45	.49
Mercury	51.00	57.00
Phenyl, acetaldehyde	2.10	2.25
Sodium, silicofluoride	.06	.06¾
Sodium, phosphate di	2.20	2.45
Wax, Japan	.07	.07½

CHEMICAL MARKETS' Average Price for 20 representative industrial chemicals remained stationary during July after an advance in June, the first since October



1930. One chemical, dry red lead, declined early in the month, but recovered as the month closed when the metal market registered a decided advance in common with most commodities. The Price now stands at .0632 against .0646 in July 1931 and .0714 in July 1930. A downward revision in sodium nitrate was looked for in many quarters, but with the announcement of the formation of the new nitrogen cartel, it is not unlikely that prices may be repeated at present levels or close to it.

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Acetaldehyde, drs 1c-1 wks...lb.	.18½	.21	.18½	.21	.18½	.21	.18½	.21
Acetaldol, 50 gal dr.....lb.	.27	.31	.27	.31	.27	.31	.27	.31
Acetamide.....lb.	.95	1.35	.95	1.35	.95	1.35	1.20	1.35
Acetanilid, tech, 150 lb bbl...lb.	.20	.21	.20	.23	.22	.23	.21	.23
Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.21	.25	.21	.25	.21	.25	.25	.29
Acetin, tech drums.....lb.	.30	.32	.30	.32	.30	.32	.30	.32
Acetone, tanks.....lb.	.....	.10	...	.10	.10	.10½	.11	.12
Acetone Oil, bbls NY.....gal..	1.15	1.25	1.15	1.25	1.15	1.25	1.15	1.25
Acetyl Chloride, 100 lb cby...lb.	.55	.68	.55	.68	.55	.68	.55	.68
Acetylene Tetrachloride (see tetrachlorethane).....								
Acids								
Acid Abietic.....	.12	.12	.12	.12	.12	.12	.....	.....
Acetic, 28% 400 lb bbls c-1 wks .....100 lb.	2.65	2.75	2.40	2.75	2.40	2.60	2.60	3.88
Glacial, bbl c-1 wk....100 lb.	.....	9.14	8.35	9.14	8.35	9.23	9.23	13.68
Glacial, tanks.....	....	8.89	8.10	8.89	8.10	8.98	8.98	13.43
Adipic.....	.72	.72	.72	.72	.72	.72	.....	.....
Anthranilic, refd, bbls.....lb.	.85	.95	.85	.95	.85	.95	.85	1.00
Technical, bbls.....lb.	.65	.70	.65	.70	.65	.80	.75	.80
Battery, cbys.....100 lb.	1.60	2.25	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb bbls....lb.	.35	.45	.35	.45	.35	.45	.40	.53
Boric, powd, 250 lb. bbls. .....lb.	.0425	.05	.0425	.07	.06½	.07½	.06½	.07½
Broenner's, bbls.....lb.	1.20	1.25	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 100% basis cbys....lb.	.80	.85	.80	.85	.80	.85	.80	.90
Camphoric.....lb.	.....	5.25	.....	5.25	.....	5.25	5.25	5.25
Chlorosulfonic, 1500 lb drums wks.....lb.	.04½	.05½	.04½	.05½	.04½	.05½	.04½	.05½
Chromic, 99¾%, drs.....lb.	.13	.13½	.13	.14½	.14½	.17	.15	.19
Chromotropic, 300 lb bbls....lb.	1.00	1.06	1.00	1.06	1.00	1.06	1.00	1.06
Citric, USP, crystals, 230 lb. bbls.....lb.	.30	.30½	.30	.33½	.33½	.43	.40	.59
Cleve's, 250 lb bbls.....lb.	.52	.54	.52	.54	.52	.54	.52	.54
Cresylic, 95%, dark drs NY.gal.	.40	.41	.40	.47	.42	.60	.54	.70
97-99%, pale drs NY.....gal.	.45	.49	.45	.50	.49	.60	.58	.77
Formic, tech 90%, 140 lb. cby.....lb.	.10½	.12	.10½	.12	.10½	.12	.10½	.12
Gallic, tech, bbls.....lb.	.60	.70	.60	.70	.60	.70	.50	.55
USP, bbls.....lb.	.....	.74	.....	.74	.....	.74	.74	.74
Gamma, 225 lb bbls wks.....lb	.75	.77	.75	.80	.77	.80	.77	.80
H, 225 lb bbls wks.....lb.	.60	.65	.60	.65	.60	.70	.65	.70
Hydriodic, USP, 10% soln cby lb.	.60	.61	.60	.67	.....	.67	.67	.67
Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.45	.48	.45	.48	.45	.48
Hydrochloric, CP, see Acid Muriatic.....							.....	.....
Hydrocyanic, cylinders wks .lb.	.80	.90	.80	.90	.80	.90	.80	.90
Hydrofluoric, 30%, 400 lb bbls wks.....lb.	.....	.06	.....	.06	.....	.06	.06	.06½
Hydrofluosilicic, 35%, 400 lb. bbls wks.....lb.	.11	.12	.11	.12	.11	.12	.11	.12
Hypophosphorous, 30%, USP, demijohns .....lb.	.75	.80	.75	.85	.....	.85	.85	.85
Lactic, 22%, dark, 500 lb bbls lb.	.04	.04½	.04	.04½	.04	.04½	.04	.05
44%, light, 500 lb bbls.... lb.	.11½	.12	.11½	.12	.11½	.12	.11	.12
Laurent's, 250 lb bbls.....lb.	.36	.42	.36	.42	.36	.42	.36	.42
Linoleic.....lb.	.16	.16	.16	.16	.16	16	.....	.....
Malic, powd, kegs.....lb.	.45	.60	.45	.60	.45	.60	.45	.60
Metanilic, 250 lb bbls.....lb.	.60	.65	.60	.65	.60	.65	.60	.65
Mixed Sulfuric - Nitric..... tanks wks.....N unit	.07	.07¼	.07	.07¼	.07	.07½	.07	.07½
tanks wks.....S unit	.008	.01	.008	.01	.008	.01	.008	.01
Monochloroacetic, tech bbl...lb.	.20	.30	.20	.30	.20	.30	.18	.30
Monosulfonic, bbls.....lb.	1.55	1.60	1.55	1.70	1.65	1.70	1.65	1.70
Muriatic, 18 deg, 120 lb cbys c-1 wks .....100 lb.	.....	1.35	.....	1.35	.....	1.35	1.35	1.35
tanks, wks.....100 lb.	.....	1.00	.....	1.00	.....	1.00	1.00	1.00
20 degrees, cbys wks...100 lb.	.....	1.45	.....	1.45	.....	1.45	1.45	....
N & W, 250 lb bbls.....	.85	.95	.85	.95	.85	.95	.85	.95
Naphthionic, tech, 250 lb.....	.60	.65	.60	.65	.60	.65	.....	Nom.
Nitric, 36 deg, 135 lb cbys c-wks. .....100 lb.	.....	5.00	.....	5.00	.....	5.00	5.00	5.00
40 deg, 135 lb cbys, c-1 wks.....100 lb.	.....	6.00	.....	6.00	.....	6.00	6.00	6.00
Oxalic, 300 lb bbls wks NY....lb.	.11	.11¼	.11	.11½	.10¾	.11½	.11	.11¾
Phosphoric 50%, U. S. P.....lb.	.....	.14	.....	.14	.....	.14	.14	.14
Syrupy, USP, 70 lb drs....lb.	.....	.14	.....	.14	.....	.14	.14	.14
Picramic, 300 lb bbls.....lb.	.65	.70	.65	.70	.65	.70	.65	.70
Picric, kegs.....lb.	.30	.50	.30	.50	.30	.50	.30	.50
Pyrogallic, crystals..... .....lb.	1.45	1.50	1.45	1.60	1.50	1.60	1.30	1.60
Salicylic, tech, 125 lb bbl.....lb.	.33	.37	.33	.37	.33	.37	.33	.37
Sulfanilic, 250 lb. bbls.....lb.	.14½	.15	.14½	.16	.15	.16	.15	.16
Sulfuric, 66 deg, 180 lb cbys 1c-1 wks.....100 lb.	1.60	1.95	1.60	1.95	1.60	1.95	1.60	1.95
tanks, wks, ton	....	15.00	.....	15.00	.....	15.00	15.00	15.50
1500 lb dr wks.....100 lb.	1.50	1.65	1.50	1.65	1.65	1.50	1.50	1.65
60°, 1500 lb dr wks....100 lb.	1.27½	1.42½	1.27½	1.42½	1.42½	1.27½	1.27½	1.42½

ACETIC ACID

Also: ALUMINUM SULPHATE . . SODIUM SULPHATE (Glauber's Salt) . . SODIUM FLUORIDE . . SULPHURIC ACID . . SODIUM SULPHIDE (chipped-conc.) MAGNESIUM SULPHATE (Epsom Salt) . . NITRIC ACID . . MURIATIC ACID

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

Acid Acetic — A slight improvement in the textile field increased the volume going into that industry, but aside from this, the market was unchanged from the conditions prevailing in June.

Acid Chromic — With automobile production slightly lower leading automotive producers were holding down purchases momentarily, waiting further indications on the trend of business in the near future. Prices were unchanged.

Acid Formic — The renewed activity in the textile centers created a slightly better call for this commodity. Prices have remained steady and unchanged in this item for months.

Acid Lactic — Again the textile field was responsible for larger shipments of both the 22 and 44 per cent grades.

Acid Muriatic — Production has been curtailed to meet present conditions and prices are consequently well maintained. Muriatic, boric, and "other inorganic acids" exports from the U. S. during the first five months of 1932 show substantial increases over the same period of 1931, while sulfuric and nitric acids showed declines of 77 and 213 short tons respectively. The quantities and values of these exports for the respective products and periods are shown as follows:

Acid	*Jan.-May, 1931 Pounds*	*Value*
Muriatic	2,736,868	$44,519
Boric	1,530,746	76,698
Sulfuric	1,593,995	29,799
Nitric	531,693	35,184
Other inorganic acids and anhydrides	1,250,397	103,773
Acid	*Jan.-May, 1932 Pounds*	*Value*
Muriatic	4,787,985	$65,589
Boric	1,908,797	81,155
Sulfuric	1,439,555	22,560
Nitric	105,657	12,272
Other inorganic acids and anhydrides	2,796,233	103,859

Acid Oxalic — Producers quoted the market at 11c, unchanged from the previous month's level. Sales were fair for this period of the year.

Acid Sulfuric — The quiet conditions prevailing in this market carried over into July. With production greatly curtailed, the price structure has remained fairly stable. Reports from Baltimore stress particularly the poor demand from the fertilizer field. Production of sulfuric acid by manufacturers of superphosphate during May totaled 50,690 short tons, according to a preliminary estimate by the U. S. Bureau of Census. This compared with a revised total of 60,416 tons in April and 105,250 tons in May, 1931. The estimate is based upon reports received from 76 manufacturers operating 104 plants. May consumption in fertilizer manufacture was 30,266 tons, against 52,413 tons in April and 105,256 tons in May last year. Stocks on hand were 74,898 tons, against 77,713

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Oleum, 20%, 1500 lb. drs 1c-1 wks ton	.....	18.50	.....	18.50	.....	18.50	18.50	18.50
40%, 1c-1 wks net ton	.....	42.00	.....	42.00	.....	42.00	42.00	42.00
Tannic, tech, 300 lb bbls lb.	.23	.40	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran. powd, 300 lb bbls lb.	.23	.23½	23	.25½	.25½	.29½	.33	.38½
Tobias, 250 lb bbls lb.	.75	.80	.75	.85	.80	.85	.85	.85
Trichloroacetic bottles lb.	.....	2.75	.....	2.75	.....	2.75	2.75	2.75
Kegs lb.	.....	2.00	.....	2.00	.....	2.00	2.00	2.00
Tungstic, bbls lb.	1.40	1.70	1.40	1.70	1.40	1.70	1.40	1.70
Albumen, blood, 225 lb bbls lb.	.35	.40	.35	.40	.38	.40	.38	.40
dark bbls., lb.	.10	.17	.10	.20	.12	20	.12	.20
Egg, edible lb.	.79	.80	.75	.90	.55	.60	.55	.75
Technical, 200 lb cases lb.	.62	.66	.62	.66	.48	.66	.50	.73
Vegetable, edible lb.	.60	.65	.60	.65	.60	.65	.60	.65
Technical lb.	.50	.55	.50	.55	.50	.55	.50	.55
Alcohol								
Alcohol Butyl, Normal, 50 gal drs c-1 wks lb.	.....	.123	.123	.1595	.1495	.17½	.17½	.18½
Drums, 1-c-1 wks lb.	.....	.128	.128	.1645	.1545	.17½	.17½	.18½
Tank cars wks lb.	.....	.113	.113	.143	.143	.16½	.16½	.17½
Amyl (from pentane) Tanks wks lb.	.....	.176	.176	.203	203	.236	.236	.236
Diacetone, 50 gal drs del gal.	1.42	1.60	1.42	1.60	1.42	1.60	1.42	1.60
Ethyl, USP, 190 pf, 50 gal. bbls gal.	2.56½	2.65	2.55	2.65	2.37	2.75	2.63	2.75
Anhydrous, drums gal.	.54	.58	.54	.58	.54	.60	.56	.71
No. 5, *188 pf, 50 gal. drs. drums extra gal.	.....	.396*	.27	.396	.27	.44	.40	50
Isopropyl, ref, gal drs gal.	.60	.65	.60	.65	.60	1.00	.60	1.00
Propyl Normal, 50 gal dr. gal.	.....	.75	.....	.75	.....	1.00	1.00	1.00
Alcotate, tanks gal.	.....	.60	.....	.60	.60	.60	.....	.....
Aldehyde Ammonia, 100 gal drlb.	.80	.82	.80	.82	.80	.82	.80	.82
Alpha-Naphthol, crude, 300 lb. bbls lb.	.57	.58	.57	.65	.60	.65	.60	.65
Alpha-Naphthylamine, 350 lb. bbls lb.	.32	.34	.32	.34	.32	.34	.32	.34
Alum Ammonia, lump, 400 lb. bbls, 1-c-1 wks 100 lb.	3.00	3.25	3.00	3.25	3.00	3.50	3.20	3.50
Chrome, 500 lb casks, wks 100 lb.	4.50	5.25	4.50	5.25	4.50	5.25	4.50	5.25
Potash, lump, 400 lb casks wks 100 lb.	3.00	3.50	3.00	3.50	3.00	3.50	3.10	3.50
Soda, ground, 400 lb bbls wks 100 lb.	3.50	3.75	3.50	3.75	3.50	3.75	3.50	3.75
Aluminum Metal, c-1 NY. 100 lb.	22.90	24.30	22.90	24.30	22.90	24.30	24.30	24.30
Chloride Anhydrous lb.	.05	.09	.05	.09	.05	.09	.05	.15
Hydrate, 96%, light, 90 lb. bbls lb.	.15	.16½	.15	.17	.16	.17	.16	.18
Stearate, 100 lb bbls lb.	.15	.17	.15	.21	.18	.22	.19	.26
Sulfate, Iron, free, bags c-1 wks 100 lb.	1.90	1.95	1.90	1.95	1.90	1.95	1.90	2.05
Coml, bags c-1 wks 100 lb.	1.25	1.30	1.25	1.30	1.25	1.30	1.25	1.40
Aminoazobenzene, 110 lb kegs lb.	.....	1.15	.....	1.15	.....	1.15	1.15	1.15
Ammonium								
Ammonia anhydrous Com. tanks	.....	.05⅝	.....	.05⅝	.....	.05½	.05½	.05½
Ammonia, anhyd. 100 lb cyl. lb.	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.15½
Water, 26°, 800 lb dr del. lb.	.02½	.03	.02½	.03	.02½	.03½	.03½	.03½
Ammonia, aqua 26° tanks	.....	.02¾	.....	.02½	.02½	.02½	.02½	.02½
Acetate lb.	.26	.33	.26	.39	.28	.39	.28	.39
Bicarbonate, bbls., f.o.b. plant 100 lb.	.....	5.15	.....	5.15	.....	5.15	5.15	5.15
Bifluoride, 300 lb bbls lb.	.14½	.17	.14½	.22	.21	.22	.21	.22
Carbonate, tech, 500 lb cs. lb.	.08	.12	.08	.12	.09	.12	.09	.12
Chloride, white, 100 lb. bbls wks 100 lb.	4.50	5.15	4.45	5.15	4.45	5.15	4.45	5.15
Gray, 250 lb bbls wks lb.	5.25	5.75	5.25	5.75	5.25	5.75	5.25	5.75
Lump, 500 lb cks spot lb.	.10½	.11	.10½	.11½	.11	.11½	.11	.11½
Lactate, 500 lb bbls lb.	.15	.16	.15	.16	.15	.16	.15	.16
Ammonium Linoleate lb.	.....	.11	.11	.15	.15	.....	.....	.....
Nitrate, tech, casks lb.	.06	.10	.06	.10	.06	.10	.06	.10
Persulfate, 112 lb kegs lb.	.20	.22½	.20	.27½	.25	.30	.26	.30
Phosphate, tech, powd, 325 lb. bbls lb.	.08½	.11½	.08½	.12	.11½	.12	.11½	.13
Sulfate, bulk c-1 100 lb.	.....	1.40	1.05	1.40	1.10	1.80	1.75	2.10
Southern points 100 lb.	.....	1.40	1.05	1.40	1.25	1.75	1.82½	2.10
Nitrate, 26% nitrogen 31.6% ammonia imported bags c.i.f. ton	34.60	35.00	34.60	35.00	34.60	35.00	45.00	57.60
Sulfocyanide, kegs lb.	.36	.48	.36	.48	.36	.48	.36	.48
Amyl Acetate, (from pentane) Tanks lb.	.....	.157	.157	.17½	.16	.222	.222	.236
Tech., drs lb.	.17½	.18	.17½	.18	.16½	.236	.225	.24
Alcohol, see Fusel Oil								
Furoate, 1 lb tins lb.	.....	5.00	.....	5.00	.....	5.00	5.00	5.00
Aniline Oil, 960 lb drs & tks. lb.	.14½	.16	.14½	.16	.14½	.16	.15	.16
Annatto, fine lb.	.34	.37	.34	.37	.34	.37	.34	.37
Anthraquinone, sublimed, 125 lb. bbls lb.	.....	.45	.45	.55	.50	.55	.50	.90
Antimony, metal slabs, ton lots lb.	.05	.05½	.05	.06½	.06½	.07¼	.06½	.09½
Needle, powd, bbls lb.	.07	.08	.08½	.09	.08½	.09	.08	.09½
Chloride, soln (butter of) cbys lb.	.13	.17	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls lb.	.07½	.08¾	.07½	.08¾	.08½	.08¾	.07½	.08¾
Salt, 63% to 65%, tins lb.	.20	.23	.20	.24	.22	.24	.22	.24
Sulfuret, golden, bbls lb.	.16	.20	.16	.20	.16	.20	.16	.20
Vermillion, bbls lb.	.38	.42	.38	.42	.38	.42	.38	.42
Archil, conc, 600 lb bbls lb.	.20	.21	.17	.21	.17	.19	.17	.19
Double, 600 lb bbls lb.	.16	.17	.16	.17	.12	.14	.12	.14
Triple, 600 lb bbls lb.	.16	.17	.16	.17	.12	.14	.12	.14
Argols, 80%, casks lb.	.12½	.13	.12½	.13	.....	.18¾	.18½	.18¾
Crude, 30%, casks lb.	.07	.07½	.07	.07½	.07	.08	.07½	.08

*Delivery Metropolitan area

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

tons at the end of April and 108,824 tons at the end of May, 1931. Details of production, consumption of fertilizer manufacture, shipments and stocks on hand for May and for the January-May period follow:

	†*May* 1932	**April* 1932
	Tons	
Production and purchases—		
Produced, total	50,690	60,416
Northern district	42,457	47,099
Southern district	8,233	13,317
Purchased from fertilizer mfrs.	1,954	6,850
Northern district	927	3,203
Southern district	1,027	3,647
Purchased from non-fertilizer mfr., total	11,993	13,867
Northern district	6,812	9,370
Southern district	5,181	4,497
Consumed in fertilizer mfrs	30,266	52,413
Northern district	22,084	31,803
Southern district	8,182	20,610
Shipments—		
To other than fertilizer mfrs	21,009	23,41‡
Northern district	18,621	20,762
Southern district	2,388	2,652
To fertilizer mfrs	16,177	15,267
Northern district	12,491	14,216
Southern district	3,686	1,051
Stocks on hand—		
Total	74,898	77,713
Northern district	52,711	55,711
Southern district	22,187	22,002

	Jan.-May 1932	*Jan.-May* 1931
	Tons	
Production and purchases—		
Produced, total	423,256	715,838
Northern district	294,765	476,821
Southern district	128,491	239,017
Purchased from fertilizer mfrs.	39,055	.....
Northern district	17,402	.....
Southern district	21,653	.....
Purchased from non-fertilizer mfrs.	61,742	151,472
Northern district	34,657	83,315
Southern district	27,085	68,157
Consumed in fertilizer mfrs	324,645	711,922
Northern district	188,193	414,233
Southern district	136,452	297,689
Shipments—		
To other than fertilizer mfrs.	119,304	181,270
Northern district	101,154	144,548
Southern district	18,150	36,722
To fertilizer mfrs.	100,244	.....
Northern district	75,435	.....
Southern district	24,809	.....
Stocks on hand—		
Total	.....	.....
Northern district	.....	.....
Southern district	.....	.....

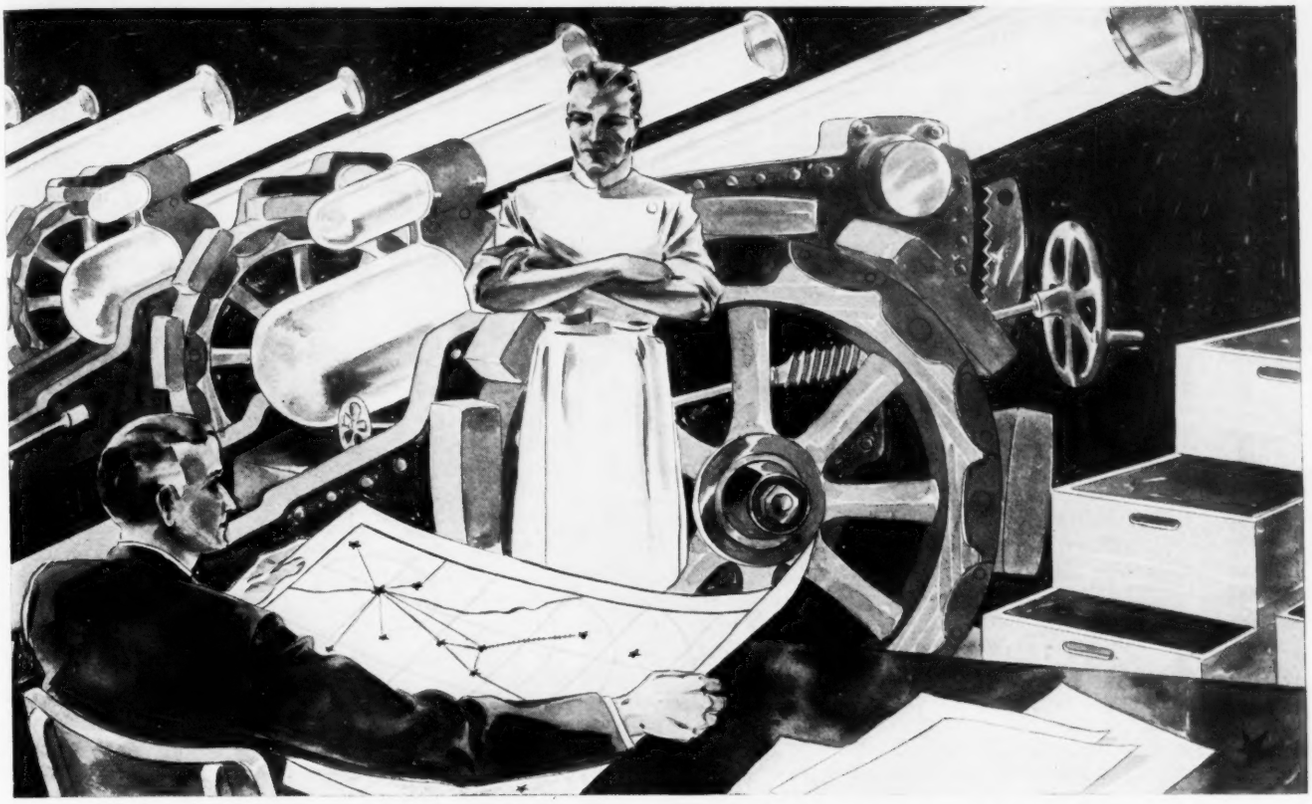
*Revised.
†Preliminary.
‡Northern district, States north of Virginia-North Carolina line; Southern district, States south of Virginia-Carolina line.

Ammonia Anhydrous — Further seasonal improvement was reported by sellers. The market remained firm with prices unchanged from 15½c to 21½c, depending upon quantity and destination.

Ammonia Aqua — A slight pickup in demand from the textile centers occurred in the last ten days of the month. Prices were unaltered.

Arsenic — Demand for arsenicals was rather spotty in various sections of the country, but the totals shipped were reported fair. Schedule prices were fairly well adhered to, both for raw materials and finished products. Curtailment in smelting operations has prevented any large accumulation of arsenic from plaguing the market. Production of arsenic, as arsenious oxide (white arsenic), in the U. S. in 1931 amounted to 17,137 short tons, of which 14,482 tons was refined and 2,655 tons was crude, according to the Bureau of Mines. The entire output in 1931 was a by-product from smelting

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Aroclors, wks.....lb.	.18	.18	.40	.20	.40	.20	.40
Arsenic, Red. 224 lb kegs, cs..lb.	.09¾	.09¾	.10	.09¾	.10	.08¾	.11
White, 112 lb kegs.....lb.	.04	.04	.05	.03¾	.05	.03¾	.04¼
Asbestine, c-1 wks.....ton	.....	.....	15.00	.....	15.00	15.00	15.00
Barium							
Barium Carbonate, 200 lb bags wks.....ton	47.00	47.00	57.00	56.50	60.00	58.00	60.00
Chlorate, 112 lb kegs NY..lb.	13¼	13¼	.15	14	15	14	15
Chloride, 600 lb bbl wks...ton	63.00	63.00	69.00	63.00	69.00	63.00	69.00
Dioxide, 88%, 690 lb drs...lb.	.11	.11	.13	.12	13	12	13
Hydrate, 500 lb bbls.....lb.	.04¾	.05½	.05½	.04¾	.05½	.04¼	.05½
Nitrate, 700 lb casks.....lb.	.07	.07½	.08	.07½	.08½	.07½	.08½
Barytes, Floated, 350 lb bbls wks.....ton	23.00	24.00	24.00	23.00	24.00	23.00	24.00
Bauxite, bulk, mines.....ton	5.00	6.00	6.00	5.00	8.00	5.00	8.00
Beeswax, Yellow, crude bags..lb.	.14½	.15	.24	.22	.31	.24	.34
Refined, cases.....lb.	.20	.21	.28	.25	.37	.37	.38
White, cases.....lb.	.30	.32	.36	.34	.36	.34	.53
Benzaldehyde, technical, 945 lb. drums wks.....lb.	.60	.65	.65	.60	.65	.60	.65
Benzene							
Benzene, 90%, Industrial, 8000 gal tanks wks.....gal.	.....	.20	.....	.20	.18	.21	.21	.22
Ind. Pure, tanks works....gal.	.....	.20	.....	.20	.18	.21	.21	.22
Benzidine Base, dry, 250 lb. bbls.....lb.	.65	.67	.65	.67	.65	.67	.65	.74
Benzoyl, Chloride, 500 lb drs..lb.	.40	.45	.40	.47	.45	.47	.45	1.00
Benzyl Chloride, tech drs ...lb.	.....	.30	.....	.30	.....	.30	.25	.25
Beta-Naphthol, 250 lb bbl wk..lb.	.....	.22	.....	.22	.22	.24	.22	.24
Naphthylamine, sublimed, 200 lb bbls.....lb.	1.25	1.35	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls .....lb.	.53	.58	.53	.58	.53	.65	.53	.65
Blanc Fixe, 400 lb bbls wks..ton	60.00	75.00	60.00	80.00	75.00	90.00	75.00	90.00
Bleaching Powder							
Bleaching Powder, 800 lb drs c-1 wks contract....100 lb.	1.75	2.00	1.75	2.00	1.75	2.35	2.00	2.35
Blood, Dried, fob, NY.....Unit	1.50	1.55	1.20	1.90	1.65	3.00	3.00	3.90
Chicago.....Unit	1.50	1.60	1.50	1.60	1.50	2.35	2.75	4.50
S. American shipt.....Unit	.....	Nom	.....	Nom.	2.00	3.20	3.15	4.10
Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.....	.35	.....	.35	.....	.35	.35	.35
Bone, raw, Chicago.....ton	.....	20.00	20.00	21.50	21.00	32.00	31.00	39.00
Bone Ash, 100 lb kegs.....lb.	.06	.07	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls.....lb.	.06	.08½	.05½	.08½	.05½	.08½	.05½	.08½
Meal, 3% & 50%, Imp....ton	21.25	22.00	21.00	22.00	21.00	31.00	31.00	31.00
Borax, bags.....lb.	.018	.02	.018	.03¼	.02½	.03¼	.02½	.03½
Bordeaux, Mixture, 16% pwd.lb.	.11½	.13	.11½	.13	.11½	.13	.12	.14
Paste, bbls.....lb.	.11½	.13	.11½	.13	.11½	.13	.12	.14
Brazilwood, sticks, shpmt.....lb.	26.00	28.00	26.00	28.00	26.00	28.00	26.00	28.00
Bromine, cases.....lb.	.36	.43	.36	.43	36	.43	.38	.47
Bronze, Aluminum, powd blk..lb.	.60	1.20	.60	1.20	.60	1.20	60	1.20
Gold bulk.....lb.	.55	1.25	.55	1.25	.55	1.25	.55	1.25
Butanes, com 16.32° group 3 tanks.....lb.	.....	.04	.....	.....	.....	.....	.....	.....
Butyl, Acetate, normal drs...lb.	.134	.139	.134	.166	.161	.175	.17	.20
Tank, wks.....lb.	.....	.124	.124	.143	.143	.175	.16	.186
Aldehyde, 50 gal drs wks...lb.	.31½	.36	.31½	.36	.34	.44	.34	.44
Carbitol see Diethylene Glycol Mono (Butyl Ether)	.....	.....	.....	.....	.....	.....	.....	.....
Cellosolve (see Ethylene glycol mono butyl ether).....								
Furoate, tech., 50 gal. dr..lb.	.....	.50	.....	.50	.....	.50	50	.50
Propionate, drs .....lb.	.20	.22	.20	.25	.22	.25	.22	.27
Stearate, 50 gal drs.....lb.	.25	.25½	.25	.25½	.25	.30	.25	.30
Tartrate, drs.....lb.	.55	.60	.55	.60	.55	60	.55	.60
Cadmium, Sulfide, boxes.....lb.	.65	.90	.65	.90	.65	.90	.90	1.75
Calcium								
Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	2.50	2.00	2.50	....	2.00	2.00	4.50
Arsenate, 100 lb bbls c-1 wks.....lb.	.05½	.06	.05½	.06	.06	09	07	09
Carbide, drs.....lb.	.05	.06	.05	.06	05	.06	05	.06
Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	21.00	.....	21.00	21.00	22.75	22.75	22.75
Solid, 650 lb drs c-1 fob wks .....ton	.....	18.00	.....	18.00	18.00	20.00	20.00	20.00
Nitrate, 100 lb bags.....ton	34.00	35.00	34.00	35.00	34.00	43.00	40.00	43.00
Peroxide, 100 lb drs .....lb.	.....	1.25	.....	1.25	.....	1.25	1.25	1.25
Phosphate, tech, 450 lb bbls.lb.	.07½	.08	.07½	.08¼	.08	.08¼	08	.08¾
Stearate, 100 lb. bbls.....lb.	.16	.17	.16	.18	.17	.22	.19	.26
Calurea, bags S. points c.i.f..ton	.....	88.65	.....	88.65	.....	88.65	88.65	88.65
Camwood, Bark, ground bbls.lb.	.16	.18	.16	.18	.....	18	18	18
Candelilla Wax, bags.....lb.	.10	.11	.10	.14	.13	.15	.15	.20
Carbitol, (See Diethylene Glycol Mono Ethyl Ether).....	.....	.....	.....	.....	.....	.....	.....	.....
Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.08	.15	.08	.15	.08	.15
Black, 100-300 lb cases 1c-l NY.....lb.	.06	.12	.06	.12	06	.12	.06	.12
Bisulfide, 500 lb drs 1c-l NY.....lb.	.05½	.06	.05½	.06	05½	.06	.05½	.06
Dioxide, Liq. 20-25 lb cyl..lb.	.....	.06	.....	.06	.....	06	.06	.18
Tetrachloride, 1400 lb drs delivered.....lb.	.06½	.07	.06½	.07	06½	07	06½	07
Carnauba Wax, Flor, bags...lb.	.25	.26	.25	.28	26	28	28	37
No. 1 Yellow, bags .....lb.	.21	.22	.21	.24	23	40	25	33
No. 2 N Country, bags....lb.	.15	.16	.14	.16	.15	23	20	27
No. 2 Regular, bags.....lb.	.20	.21½	.20	.22	.21	23	23	30
No. 3 N. C.....lb.	.12	.12½	.11	.12	.11	.11	16	23
No. 3 Chalky .....lb.	.12	.12½	.11	.12	.11	.13½	16	23
Casein, Standard, Domestic.... ground.....lb.	.04¼	.06	.04¼	.07½	.06	.10	09½	.15½



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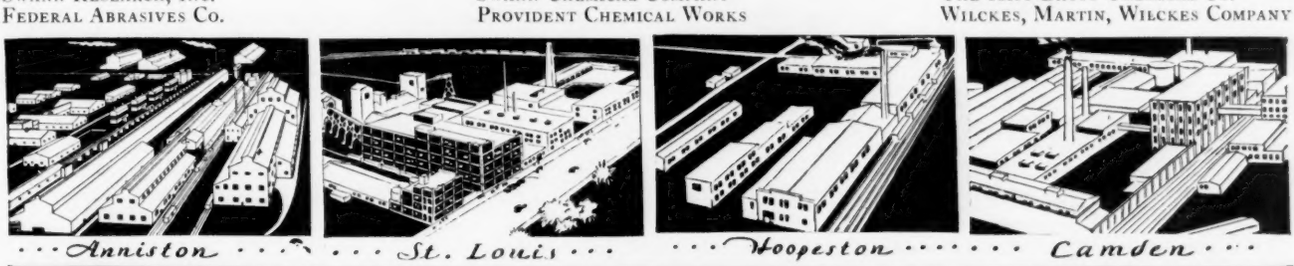

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

copper and lead ores. The products for the market consisted of refined white arsenic, crude white arsenic, "black" dust, and "treater" dust. A total of 13,777 tons of refined and crude arsenic was sold; it was valued at $796,744, or 2.99 cents a pound. The refined white arsenic, 11,982 tons, was sold for $718,386, or 3c a pound; the crude arsenic, 1,795 tons, was sold for $78,358, or 2.18c a pound.

Benzol — A slightly better demand from blenders of motor fuels gave the market a greater appearance of strength. Tire production in the Akron area was also better in the past month. Steel activity is still being maintained around 16% of capacity so that stocks of raw materials are not large. Production of crude coaltar products in coke-oven operations declined sharply in 1931. The output of the various products compared with that in 1930, according to data collected by the U. S. Bureau of Mines, as follows:

		1931
Benzene, crude and refined	gal.	14,772,297
Benzene, motor	gal.	61,960,025
Creosote oil (including distillate in coaltar solution)	gal.	16,291,598
Light oil, crude	gal.	122,529,148
Light oil products, unspecified	gal.	4,163,028
Naphthalene, crude and refined	lbs.	7,622,929
Phenol	gal.	94,097
Pitch of tar	net tons	78,983
Solvent naphtha (including xylene)	gal.	5,800,754
Tar	gal.	450,856,092
Toluene, crude and refined	gal.	11,832,932
		1930
Benzene, crude and refined	gal.	19,142,910
Benzene, motor	gal.	101,862,692
Creosote oil (including distillate in coaltar solution)	gal.	25,679,882
Light oil, crude	gal.	178,325,952
Light oil products, unspecified	gal.	6,475,725
Naphthalene, crude and refined	lbs.	12,640,102
Phenol	gal.	136,971
Pitch of tar	net tons	106,334
Solvent naphtha (including xylene)	gal.	6,118,298
Tar	gal.	602,485,929
Toluene, crude and refined	gal.	11,833,202

Total quantity of coal consumed in by-product ovens amounted to 2,220,100 tons in June as compared with 2,518,400 tons in May and 3,904,800 tons in June, 1931. Output of tar in June amounted to 20,424,920 gallons as compared with 23,169,280 gallons in May and 35,924,060 gallons in June a year ago. Production of ammonium sulfate, or its equivalent, in June totaled 26,053 tons, as against 29,549 tons in May and 44,823 tons in June, 1931. Amount of light oils recovered was 6,793,506 gallons, contrasted with 7,706,304 gallons in May and 11,948,688 gallons in June last year.

Blood, Dried — The decided improvement in the hog market brought about a much stronger price structure for all animal nitrogenous material. Stocks of blood are reported to be scarce, particularly in the local N. Y. market.

Calcium Chloride — Shipments for dust-laying purposes were reported to be in satisfactory volume at this time of

		Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Cellosolve (see Ethylene glycol mono ethyl ether)								
Acetate (see Ethylene glycol mono ethyl ether acetate)								
Celluloid, Scraps, Ivory cs	lb.	.13	.15	.13	.15	.13	.15	.20	.20
Shell, cases	lb.	.18	.20	.18	.20	.18	.20	.18	.20
Transparent, cases	lb.	.....	.15	.....	.15	.....	.15	.15	.15
Cellulose, Acetate, 50 lb kegs	lb.	.80	.90	.80	.90	.80	1.25	.80	1.25
Chalk, dropped, 175 lb bbls	lb.	.03	.03½	.03	.03½	.03	.03¼	.03	.03¼
Precip, heavy, 560 lb cks	lb.	.02	.03½	.02	.03½	.02	.03½	.02	.03½
Light, 250 lb casks	lb.	.02⅝	.03½	.02¼	.03½	.02¼	.03½	.02¼	.03½
Charcoal, Hardwood, lump, bulk wks	bu.	.18	.19	.18	.19	.18	.19	.18	.19
Willow, powd, 100 lb bbl, wks	lb.	.06	.06½	.06	.06½	.06	.06½	.06	.06½
Wood, powd, 100 lb bbls	lb.	.04	.05	.04	.05	.04	.05	04	.05
Chestnut, clarified bbls wks	lb.	.01⅜	.02	.01⅝	.02	.01⅞	.03	.02½	.03
25% tks wks	lb.	.01¼	.02½	.01¾	.02½	.01¼	.02½	.01¾	.02½
Powd, 60%, 100 lb bgs wks	lb.	.....	.04½	.....	.04¾	.....	.04½	.04¾	.04½
Powd, decolorized bgs wks	lb.	.04⅞	.05	.04⅞	.06	.05½	.06	.05¾	.06
China Clay, lump, blk mines	ton	8.00	9.00	8.00	9.00	8.00	9.00	8.00	9.00
Powdered, bbls	lb.	.01	.02	.01	.02	.01¼	.02	.01¼	.02
Pulverized, bbls wks	ton	10.00	12.00	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, bulk	ton	15.00	25.00	15.00	25.00	15.00	25.00	15.00	25.00
Chlorine									
Chlorine, cyls 1c-1 wks contract	lb.	.07	.08½	.07	.08½	.07	.08½	.07	.08½
cyls, cl wks., contract	lb.	.04	.04½	.04	.04½	.04	.04½	.04	.04½
Liq tank or multi-car lot cyls wks contract	lb.	.01¾	.02½	.01¾	.02½	.01¾	.02½	.01¾	.025
Chlorobenzene, Mono, 100 lb. drs 1c-1 wks	lb.	.06	.07½	.06	.10½	.10	.10½	.10	.10½
Chloroform, tech, 1000 lb drs	lb.	.15	.16	.15	.16	.15	.16	.15	.16
Chloropicrin, comml cyls	lb.	1.00	1.35	1.00	1.35	1.00	1.35	1.00	1.35
Chrome, Green, CP	lb.	.28	.29	.28	.29	.26	.29	.26	.29
Commercial	lb.	.06½	.10	.06½	.11	.06½	.11	.06½	.11
Yellow	lb.	.15	.16	.15	.18	.16	.18	.16	.18
Chromium, Acetate, 8% Chrome bbls	lb.	.04¾	.05¾	.04¾	.05¾	.04¾	.05¾	.04¾	.05¾
20° soln, 400 lb bbls	lb.	.....	.05½	.....	.05½	.....	.05½	.05¾	.05½
Fluoride, powd, 400 lb bbl	lb.	.27	.28	.27	.28	.27	.28	.27	.28
Oxide, green, bbls	lb.	.28	.33	.28	.35½	.34½	.35½	.34¾	.35½
Coal tar, bbls	bbl.	10.00	10.50	10.00	10.50	10.00	10.50	10.00	10.50
Cobalt Oxide, black, bags	lb.	1.25	1.35	1.25	1.45	1.35	2.22	2.10	2.22
Cochineal, gray or black bag	lb.	.45	.49	.52	.57	.52	.57	.52	1.01
Teneriffe silver, bags	lb.	.46	.49	.46	.57	.55	.57	.54	.95
Copper									
Copper, metal, electrol	100 lb.	5.32	5.20	5.32	7.25	6.25	10.36	9.50	17.78
Carbonate, 400 lb bbls	lb.	.07	.15½	.07	.16½	.08½	.16½	.08½	.21½
Chloride, 250 lb bbls	lb.	.17	.18	.17	.25	.22	.25	.22	.28
Cyanide, 100 lb drs	lb.	.39	.40	.39	.40	.39	.42	.41	.45
Oxide, red, 100 lb bbls	lb.	.15	.16	.15	.16	.15	.18	.15½	.32
Sub-acetate verdigris, 400 lb bbls	lb.	.18	.19	.18	.19	.18	.19	.18	.19
Sulfate, bbls c-1 wks	100 lb.	.....	2.75	2.75	3.10	3.10	4.95	3.95	5.50
Copperas, crys and sugar bulk c-1 wks bags	ton	14.00	14.50	14.00	14.50	13.00	14.00	13.00	14.00
Cotton, Soluble, wet, 100 lb bbls	lb.	.40	.42	.40	.42	.40	.42	.40	.42
Cottonseed, S. E. bulk c-1	ton	.....	26.50	.....	26.50	.....	26.50	.....	.....
Meal S. E. bulk	ton	.....	.....	.....	.....	.....	.....	.....	.....
7% Amm., bags mills	ton	13.25	38.00	13.25	38.00	13.25	38.00	37.50	38.00
Cream Tartar, USP, 300 lb. bbls	lb.	.17	.17½	.17	.20¼	.20½	.24½	.24½	.27
Creosote, USP, 42 lb cbys	lb.	.40	.42	.40	.42	.40	.42	.40	.42
Oil, Grade 1 tanks	gal.	.11	.12	.11	12½	.11½	.14	.15	.16
Grade 2	gal.	.10	.11	.10	.11½	.10½	.12	.13	.14
Grade 3	gal.	.09	.11	.09	.11½	.10½	.12	.13	.14
Cresol, USP, drums	lb.	.10½	.11	.10½	.11	.10½	.17	.14	.17
Crotonaldehyde, 50 gal dr	lb.	.32	.36	.32	.36	.32	.36	.32	.36
Cudbear, English	lb.	.16	.17	.16	.17	.16	.17	.16	.17
Cutch, Rangoon, 100 lb bales	lb.	.08¾	.09	.08¾	.12	.10	.13	.11	.13
Borneo, Solid, 100 lb bale	lb.	.05	06	.05	.07	.05½	.08½	.06½	.08½
Cyanamide, bags c-1 frt allowed Ammonia unit		.....	.97½	.....	.97½	.97½	.....	.....	.....
Dextrin, corn, 140 lb bags	100 lb.	3.24	3.45	3.24	3.67	3.47	4.02	4.42	4.82
White, 140 lb bags	100 lb.	3.19	3.37	3.19	3.37	3.37	4.02	4.17	4.77
Potato Yellow, 220 lb bgs	lb.	.08	.09	.08	.09	.08	.09	.08	.09
White, 220 lb bags 1c-1	lb.	.08	.09	.08	.09	.08	.09	.08	.09
Tapioca, 200 lb bags 1c-1	lb.	.07	.08	.07	.08¾	.08½	.08¼	.08	.08¼
Diamylphthalate, drs wks	gal.	.....	3.80	.....	3.80	.....	3.80	3.80	3.80
Dianisidine, barrels	lb.	2.35	2.70	2.35	2.70	2.35	2.70	2.35	2.70
Dibutylphthalate, wks	lb.	.218	.22	.218	.23½	.228	.28	.24½	.28
Dibutyltartrate, 50 gal drs	lb.	.29½	.31½	.29½	.31½	.29½	.31½	.29½	.31½
Dichloroethylether, 50 gal drs	lb.	.....	.06	.....	.06	.....	.06	.05	.07
Dichloromethane, drs wks	lb.	.55	.65	.55	.65	.55	.65	.55	.65
Diethylamine, 400 lb drs	lb.	2.75	3.00	2.75	3.00	2.75	3.00	2.75	3.00
Diethylcarbonate, drs	gal.	1.85	1.90	1.85	1.90	1.85	1.90	1.85	1.90
Diethylaniline, 850 lb drs	lb.	.55	.60	.55	.60	.55	.60	.55	.60
Diethyleneglycol, drs	lb.	.14	.16	.14	.16	.14	.16	.10	.13
Mono ethyl ether, drs	lb.	.15	.16	.15	.16	.15	.16	.13	.16
Mono butyl ether, drs	lb.	.24	.30	.24	.30	.24	.30	.24	.30
Diethylene oxide, 50 gal drs	lb.	.26	.27	.....	.....	.....	.....	.....	.....
Diethylorthotoluidin, drs	lb.	.64	.67	.64	.67	.64	.67	.64	.67
Diethyl phthalate, 1000 lb. drums	lb.	.23	.26	.23	.26	.23	.26	.24	.26
Diethylsulfate, technical, 50 gal drums	lb.	...	....	.30	.35	.30	.35	.30	.35
Dimethylamine, 400 lb drs	lb.	.....	2.62	.....	2.62	.....	2.62	2.62	2.62
Dimethylaniline, 340 lb drs	lb.	.25	.27	.25	.27	.25	.28	.26	.28

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Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

the year, but not equal to the record made in 1931.

Chlorine — Shipments for water purification purposes were better in July and a slight improvement was reported from the textile consumers. The paper industry, however, continued to show little, if any, improvement over the low levels established in March and April.

Coaltar Dyes — With the textile industry again showing signs of increasing activity, dye producers were more active, but the total increase in volume to date has not been large. Further improvement is expected as the mills turn to fall and winter goods. The prevailing fashion for white goods has been reflected in the sale of coaltar colors this season. Imports of synthetic dyes into the U. S. in June totaled 117,792 pounds and were valued at $109,208, it is reported by the Tariff Commission and the Dept. of Commerce. These figures compare with 399,213 pounds, valued at $359,117, imported during the same month, last year. Imports during the first six months of 1932 have amounted to 1,835,271 pounds, valued at $1,610,955; while imports during the corresponding period in 1931 were 2,429,615 pounds, valued at $2,113,623.

Origin

	Percentages June 1932	June 1931
Germany	85.41	75.36
Switzerland	10.63	23.15
England	3.77	1.49
All other	.19	...

Leading Dyes in June Imports

	Pounds
Vat golden yellow GK double paste (single strength)	10,100
Vat printing black B paste	5,500
Vat khaki GG paste	4,600
Vat olive GN paste	4,000
Hansa orange GG powder	3,950

Imports of aromatic chemicals during June totaled 8,778 pounds, valued at $22,843; imports in the same month last year amounted to 5,844 pounds, valued at $11,370. The total for the first six months of 1932 is 39,665 pounds, valued at $91,745, compared with 26,041 pounds, valued at $39,953, during the same period in 1931. Medicinals, photographic developers, intermediates, and other coaltar products amounting to 51,902 pounds, valued at $44,868, were imported in June, compared with 184,315 pounds, valued at $69,745, imported during June, 1931. Imports so far this year have amounted to 511,077 pounds, valued at $318,696, compared with imports during the first half of last year of 774,300 pounds, valued at $383,676. Imports of color lakes during June were 975 pounds, valued at $683. This brings the total imports this year to 10,202 pounds, with a value of $6,978. Imports in the first six months of 1931 totaled 5,196 pounds.

	Current Market		1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Dimethylsulfate, 100 lb drs.	lb.	.45	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls.	lb.	.15	.15	.16	.15	.16½	.15½	.16½
Dintrochlorobenzene, 400 lb bbls.	lb.	.13	.13	.15	.13	.15	13	.15
Dinitronaphthalene, 350 lb bbls	lb.	.34	.34	.37	.34	.37	.34	.37
Dinitrophenol, 350 lb bbls.	lb.	.23	.23	.24	.29	.30	31	.32
Dinitrotoluene, 300 lb bbls.	lb.	.16	.16	.17	.16	.17	.16	.18
Diorthotolyguanidine, 275 lb bbls wks	lb.	.42	.42	.46	.42	.46	.42	.46
Dioxan (See Diethylene Oxide)		.....	.....	.....	.....	.....	.....	.....
Diphenyl	lb.	.20	.20	.40	.20	.40	.20	.50
Diphenylamine	lb.	.34	.34	.37	.37	.38	.38	.40
Diphenylguanidine, 100 lb bbl	lb.	.30	.35	.30	.35	.30	.35	.35
Dip Oil, 25%, drums	lb.	.26	.30	.26	.30	.26	.30	.26	.30
Divi Divi pods, bgs shipmt.	ton	.....	27.00	26.00	30.00	28.00	35.00	35.00	46.50
Extract	lb.	.05	.05½	.05	.05½	.05	.05½	.05	.05½
Egg Yolk, 200 lb cases	lb.	.40	.41	.40	.52	.45	.58	.72	.80
Epsom Salt, tech, 300 lb bbls c-1 NY	100 lb.	1.70	1.90	1.70	1.90	1.70	1.90	1.70	1.90
Ether, USP anaesthesia 55 lb. drs.	lb.	.22	.23	.22	.23	.23	.28	.21	.28
USP (Conc)	lb.	.09	.10	.09	.10	.09	.10	.....	.....
Ethyl Acetate, 85% Ester, tanks	lb.	.....	.09	.....	.09	.06½	.09	.085	.115
drums	lb.	.....	.10	.....	.10	.08	.10	.094	.158
Anhydrous, tanks	lb.	.....	.10	.....	.10	.075	.119	.119	.142
drums	lb.	.....	.10½	.....	.10½	.085	.121	.115	.156
Acetoacetate, 50 gal drs.	lb.	.65	.68	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs.	lb.	.88	.90	.88	.90	.88	.90	.88	1.11
Bromide, tech, drums	lb.	.50	.55	.50	.55	.50	.55	.50	.55
Carbonate, 90%, 50 gal drs	gal.	1.85	1.90	1.85	1.90	1.85	1.90	1.85	1.90
Chloride, 200 lb drums	lb.	.....	.22	.....	.22	.....	.22	.22	.22
Chlorocarbonate, cbys	lb.	.....	.30	.....	.30	.....	.30	.30	.40
Ether, Absolute, 50 gal drs	lb.	.50	.52	.50	.52	.50	.52	.50	.52
Furoate, 1 lb tins	lb.	.....	5.00	.....	5.00	.....	5.00	5.00	5.00
Lactate, drums works	lb.	.25	.29	.25	.29	.25	.29	.25	.29
Methyl Ketone, 50 gal drs.	lb.	.....	.30	.....	.30	.....	.30	.30	.30
Oxalate, drums works	lb.	.37½	.55	.37½	.55	.45	.55	.45	.55
Oxybutyrate, 50 gal drs wks	lb.	.....	.30½	.....	.30½	.....	.30½	.30½	.30½
Ethylene Dibromide, 60 lb dr.	lb.	.65	.70	.65	.70	.....	.70	.70	.70
Chlorhydrin, 40%, 10 gal cbys. chloro, cont	lb.	.75	.85	.75	.85	.75	.85	.75	.85
Dichloride, 50 gal drums	lb.	.05	.07	.05	.07	.05	.07	.05	.07
Glycol, 50 gal drs wks	lb.	.25	.28	.25	.28	.25	.28	.25	.28
Mono Butyl Ether drs wks.		.....	.24	.....	.24	.24	.27	.23	.27
Mono Ethyl Ether drs wks		.17	.20	.17	.20	.17	.20	.16	.20
Mono Ethyl Ether Acetate dr. wks		.19½	.23	.19½	.23	.19½	.23	.19	.23
Mono Methyl Ether, drs.	lb.	.21	.23	.21	.23	.21	.23	.19	.23
Stearate		.18	.18	.18	.18	.18	.18	.....	.....
Oxide, cyl	lb.	.....	2.00	.....	2.00	.....	2.00	2.00	2.00
Ethylidenaniline	lb.	.45	.47½	.45	.47½	.45	.47½	.45	.47½
Feldspar, bulk	ton	15.00	20.00	15.00	20.00	15.00	20.00	15.00	25.00
Powdered, bulk works	ton	15.00	21.00	15.00	21.00	15.00	21.00	15.00	21.00
Ferric Chloride, tech, crystal 475 lb bbls	lb.	.04½	.07	.04½	.07½	.05	.07½	.07½	.05
Fish Scrap, dried, wks	unit	.....	1.60&10	1.60&10	3.00&10	3.00&10	4.25&10	3.90&10	4.35&10
Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis	unit	.....	1.50&50	1.50&50	2.40&50	.....	2.40&50	3.20&50	3.50&50
Fluorspar, 98%, bags		35.00	38.50	35.00	46.00	41.00	46.00	41.00	46.00
Formaldehyde									
Formaldehyde, aniline, 100 lb. drums	lb.	.37½	.42	.37½	.42	.37½	.42	.37½	.42
USP, 400 lb bbls wks	lb.	.06	.07¾	.06	.07¾	.06	.07¾	.06	.08
Fossil Flour	lb.	.02½	.04	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, bulk, mines	ton	15.00	20.00	15.00	20.00	15.00	20.00	15.00	20.00
Imp. powd c-1 bags	ton	24.00	30.00	24.00	30.00	24.00	30.00	24.00	30.00
Furfural (tech.) drums wks.	lb.	.....	.10	.....	.10	.....	.10	.10	.15
Furfuramide (tech) 100 lb dr.	lb.	.....	.30	.....	.30	.....	.30	.30	.30
Furfuryl Acetate, 1 lb tins	lb.	.....	5.00	.....	5.00	.....	5.00	5.00	5.00
Alcohol, (tech) 100 lb dr	lb.	.....	.50	.....	.50	.....	.50	.50	.50
Furoic Acid (tech) 100 lb dr.	lb.	.....	.50	.....	.50	.....	.50	.50	.50
Fusel Oil, 10% impurities	gal.	1.25	1.35	1.25	1.35	.....	1.35	1.35	1.35
Fustic, chips	lb.	.04	.05	.04	.05	.04	.05	.04	.05
Crystals, 100 lb boxes	lb.	.18	.20	.18	.20	.18	.22	.20	.22
Liquid 50°, 600 lb bbls.	lb.	.07	.08	.07	.08	.07	.10	.09	.10
Solid, 50 lb boxes	lb.	.14	.16	.14	.16	.14	.16	.14	.16
Sticks	ton	25.00	26.00	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls.	lb.	.42	.43	.42	.50	.45	.50	.45	.50
Gall Extract	lb.	.18	.20	.18	.20	.18	.20	.18	.20
Gambier, common 200 lb cs.	lb.	.06½	.07	.06½	.07	.06½	.07	.06	.07
25% liquid, 450 lb bbls.	lb.	.08	.10	.08	.10	.08	.10	.08	.10
Singapore cubes, 150 lb bg.	lb.	.07¾	.08	.07¾	.09	.09½	.09	.08½	.09
Gelatin, tech, 100 lb cases.	lb.	.45	.50	.45	.50	.45	.50	.45	.50
Glauber's Salt, tech, c-1 wks.	100 lb.	1.00	1.70	1.00	1.70	1.00	1.70	1.00	1.70
Glucose (grape sugar) dry 70-80° bags c-1 NY	100 lb.	3.24	3.34	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb bags	100 lb.	.....	3.14	.....	3.14	.....	3.14	3.14	3.14
Glue, medium white, bbls.	lb.	.16	.20	.16	.20	.16	.24	.20	.24
Pure white, bbls.	lb.	.20	.25	.20	.27	.20	.26	.22	.26
Glycerin, CP, 550 lb drs.	lb.	.09¾	.10	.09¾	.11½	.11½	.14½	.12½	.14½
Dynamite, 100 lb drs.	lb.	.07¼	.07½	.07¼	.09½	.09	.12½	.11	.12½
Saponification, tanks	lb.	.04½	.04½	.04½	.06½	.06	.07½	.07½	.08
Soap Lye, tanks	lb.	.04	.04½	.03¾	.05	.04¾	.07	.06¾	.07½
Graphite, crude, 220 lb bgs.	ton	12.00	23.00	12.00	35.00	15.00	35.00	15.00	35.00
Flake, 500 lb bbls.	lb.	.05	.06	.05	.09	.06	.09	.06	.09
Gums									
Gum Accroides, Red, coarse and fine 140-150 lb bags	lb.	.03¾	.04½	.03¾	.04½	.03¾	.04½	.03¾	.04½
Powd, 150 lb bags	lb.	.06	.06½	.06	.06½	.06	.06½	.06	.06½

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EASTMAN KODAK COMPANY

Chemical Sales Department Rochester, N. Y.

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

Copperas — The slight expansion in the steel industry has not been sufficiently large to change the basic conditions in this market and prices were firm.

Copper Sulfate — The agricultural season just about ended in the last week of July, but some improvement in requirements from industrial sources helped to maintain a fair demand. Prices were firm at existing levels. The metal price, while still at the 5¼c level, was decidedly firmer in July.

Fertilizer Materials — The first effect of the formation of the new nitrogen cartel which includes control of ammonium sulfate, was to strengthen the price of this commodity both here and abroad. The improvement in prices for hogs and wheat, if sustained, will add considerably to the farmer's buying power for the next fertilizer season. Actual sales of fertilizer in June fell off about 9 per cent from the same month last year. Sales of top-dressing materials are expected to be fair in the next few weeks. Data on fertilizer tag sales for June as reported by the N. F. A. show the declines or increases in the larger consuming states as follows:

	Percent of 1931	June Tons 1932	1931
South—			
Virginia*	58	4,255	7,358
North Carolina	56	13,907	24,630
South Carolina*	128	30,029	23,470
Georgia	23	513	2,221
Florida*	157	17,761	11,288
Alabama	14	350	2,550
Mississippi	39	525	1,341
Tennessee*	11	45	407
Missouri	29	5	17
Arkansas†	100	100	100
Louisiana	84	21	250
Texas*	18	50	275
Oklahoma	..	.....	15
Totals, South	91	67,561	73,922
Others—			
Illinois	34	75	219
Indiana	14	31	2,281
Kansas	125	45	36
Total Others	6	151	2 536
Grand Totals	89	67,712	76,458

	Percent of 1931	January-June Tons 1932	1931
South—			
Virginia*	67	205,876	306,669
North Carolina	66	639,555	967,302
South Carolina*	78	449,331	576,925
Georgia	52	355,114	683,902
Florida*	82	192,427	234,212
Alabama	48	201,650	416,500
Mississippi	43	83,525	194,836
Tennessee*	49	52,321	105,706
Missouri	54	13,977	25,715
Arkansas†	28	17,298	60,946
Louisiana*	43	32,125	73,933
Texas*	51	29,648	57,842
Oklahoma	43	2,875	6,739
Totals, South	61	2,275,722	3,711,227
Others—			
Illinois	37	9,954	26,851
Indiana	39	44,731	114,086
Kansas	94	1,433	1,526
Total Others	39	56,118	142,463
Grand totals	61	2,331,840	3,853,690

*Cottonseed meal sold as fertilizer included.
†Excludes 1,600 tons of cottonseed meal sold as fertilizer during June and 20,680 tons for January-June combined, but no separation is available for the amount of meal used as fertilizer from that used as feed. Where changes have been made in the figures for previous months the correct accumulated totals appear in the columns headed January-June.

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Yellow, 150-200 lb bags....lb.	.18	.20	.18	.20	.18	.20	.18	.20
Animi (Zanzibar) bean & pea 250 lb cases....lb.	.35	.40	.35	.40	.35	.40	.35	.40
Glassy, 250 lb cases....lb.	.50	.55	.50	.55	.50	.55	.50	.55
Asphaltum, Barbadoes (Manjak) 200 lb bags....lb.	.04	.05	.04	.06	.04½	.12	.09	.12
Egyptian, 200 lb cases....lb.	.13	.15	.13	.15	.13	.17	.15	.17
Gilsonite Selects, 200 lb bags ....ton	30.50	32.90	30.50	32.90	30.50	32.90	30.50	32.90
Damar Batavia standard 136, lb. cases....lb.	.08½	.09	.08½	.09	.08½	.13	.14	.20
Batavia Dust, 160 lb bags....lb.	.04	.05	.04	.05½	.05½	.06	.06	.11
E Seeds, 136 lb cases....lb.	.05½	.06	.05½	.06½	.07	.08	.08	.13
F Splinters, 136 lb cases and bags....lb.	.05½	.06	.05½	.06	.06½	.07½	.07	.13½
Singapore, No. 1, 224 lb cases .lb.	.10½	.11	.10½	.11	.10½	.15	.18½	.24
No. 2, 224 lb cases....lb.	.06	.07	.06	.07½	.07	.10	.13	.20½
No. 3, 180 lb bags....lb.	.04½	.05	.04½	.05	.05	.06	.07	.11½
Benzoin Sumatra, U. S. P. 120 lb. cases....lb.	.20	.21	.19	.22	.23	.34	.33	.40
Copal Congo, 112 lb bags, clean opaque....lb.	.16½	.17	.16½	.17	.16	.17	.16	.17
Dark, amber....lb.	.06	.07	.06	.07	.06½	.07½	.07½	.08
Light, amber....lb.	.08	.08½	.08	.09	.08	.14	.12½	.14
Water, white....lb.	.37	.45	.37	.45	.37	.45	.37	.45
Mastic....lb.	.36½	.37	.35	.40	.42	.58	.57	.65
Manila 180-190 lb baskets								
Loba A....lb.	.09	.10	.09	.11	.11	.13	.13	.17½
Loba B....lb.	.08	.08½	.08	.08½	.09	.10½	.13½	.16½
Loba C....lb.	.07	.08	.07	.08	.08½	.10	.10	.14
M A Sorts....lb.	.04½	.05	.04½	.05	.04½	.06½	.....	.....
D B B Chips....lb.	.05	.06	.05	.06½	.05½	.08	.....	.....
East Indies chips, 180 lb bags lb.	.04½	.05	.04½	.05½	.05	.05½	.09	.11
Pale bold, 224 lb cs....lb.	.12½	.14	.12½	.16	.15½	.16	.17½	.21
Pale nubs, 180 lb bags...lb.	.06½	.07	.06½	.08½	.08	.09	.12½	.16
Pontianak, 224 lb cases.....								
Bold gen No. 1....lb.	.14	.15	.14	.16	.16	.17	.19	.21
Gen. chips spot....lb.	.05	.06	.05	.08	.07	.08½	.13½	.15
Elemi, No. 1, 80-85 lb cs...lb.	.09	.09½	.09	.09½	.10	.12	.12½	.14
No. 2, 80-85 lb cases....lb.	.08½	.09	.08½	.09	.09½	.11½	.12	.13½
No. 3, 80-85 lb cases....lb.	.08	.08½	.08	.08½	.08½	.11	.11	.13
Kauri, 224-226 lb cases No. 1 ....lb.	.20	.25	.20	.42	.42	.50	.48	.57
No. 2 fair pale....lb.	.20	.25	.20	.30	.24	.29	.32	.38
Brown Chips, 224-226 lb. cases....lb.	.10	.12	.10	.12	.10	.12	.10	.12
Bush Chips, 224-226 lb. cases....lb.	.22	.24	.22	.24	.28	.34	.38	.40
Pale Chips, 224-226 lb cases ....lb.	.11	.14	.11	.14	.19	.22	.24½	.26
Sandarac, prime quality, 200 lb bags & 300 lb casks....lb.	.23½	.23½	.23	.24	.18	.22	.27	.40
Helium, 1 lit. bot....lit.	.....	25.00	.....	25.00	.....	25.00	25.00	25.00
Hematine crystals, 400 lb bbls lb.	.10	.18	.10	.18	.14	.18	.14	.18
Paste, 500 bbls....lb.	.....	.11	.....	.11	.....	.11	.11	.11
Hemlock 25%, 600 lb bbls wks lb.	.03½	.04½	.03	.04½	.03	.03½	.03	.03½
Bark....ton	.....	16.00	.....	16.00	.....	16.00	16.00	16.00
Hexalene, 50 gal drs wks....lb.	.....	.30	.30	.40	.40	.60	.60	.60
Hexamethylenetetramine, drs lb.	.46	.47	.46	.47	.46	.50	.46	.50
Hoof Meal, f.o.b. Chicago...unit	.80	.90	.80	1.35	1.35	2.50	2.50	3.75
South Amer. to arrive....unit	1.25	1.45	1.25	1.65	1.80	2.70	2.70	3.75
Hydrogen Peroxide, 100 vol, 140 lb cbys....lb.	.20	.21	.20	.21	.21	.24	.21	.26
Hydroxyamine Hydrochloride lb.	.....	3.15	.....	3.15	.....	3.15	3.15	3.15
Hypernic, 51°, 600 lb bbls....lb.	.11	.12	.11	.12	.11	.15	.12	.15
Indigo Madras, bbls....lb.	1.25	1.30	1.25	1.30	1.25	1.30	1.28	1.30
20% paste, drums....lb.	.15	.18	.15	.18	.15	.18	.15	.18
Synthetic, liquid....lb.	.....	.12	.....	.12	.....	.12	.12	.12
Iron Chloride, see Ferric o Ferrous								
Iron Nitrate, kegs....lb.	.09	.10	.09	.10	.09	.10	.09	.10
Coml, bbls....100 lb.	2.50	3.25	2.50	3.25	2.50	3.25	2.50	3.25
Oxide, English....lb.	.04	.10	.04	.10	.10	.12	.10	.12
Red, Spanish....lb.	.02	.02½	.02	.03½	.02½	.03½	.02½	.03½
Isopropyl Acetate, 50 gal drs gal.	.85	.90	.85	.90	.85	.90	.85	.90
Japan Wax, 224 lb cases....lb.	.07	.07¼	.07	.09	.07½	.11	.11½	.15½
Kieselguhr, 95 lb bgs NY..... Brown....ton	60.00	70.00	60.00	70.00	60.00	70.00	60.00	70.00
Lead Acetate, bbls wks...100 lb.	9.00	9.50	9.00	10.00	9.50	11.00	10.50	13.50
White crystals, 500 lb bbls wks....100 lb.	10.00	10.50	10.00	11.00	10.50	12.25	11.50	14.50
Arsenate, drs 1c-1 wks....lb.	.09½	.13	.09½	.13	.10	.14	.13	.16
Dithiofuroate, 100 lb dr....lb.	.....	1.00	.....	1.00	.....	1.00	1.00	1.00
Metal, c-1 NY....100 lb.	.....	2.80	2.70	3.75	3.75	4.60	5.10	7.75
Nitrate, 500 lb bbls wks....lb.	.10½	.14	.10½	.14	.12	.14	.13	.14
Oleate, bbls....lb.	.17½	.18	.17½	.18	.17½	.18	.17½	.18
Oxide Litharge, 500 lb bbls .lb.	.05½	.05½	.05½	.07	.06¼	.08	.08¼	.08¼
Red, 500 lb bbls wks....lb.	.06½	.06½	.06½	.07	.06¼	.08¼	.08¼	.09¼
White, 500 lb bbls wks...lb.	.06½	.07	.06½	.07	.06¼	.08	.07¼	.09½
Sulfate, 500 lb bbls wk...lb.	.05¾	.06	.05¾	.06	.05¾	.07	.06¼	.08¼
Leuna saltpetre, bags c.i.f....ton	.....	Nom.	.....	Nom.	.....	57.60	57.60	57.60
S. points c.i.f....ton	.....	Nom.	.....	Nom.	.....	57.90	57.90	57.90
Lime, ground stone bags....ton	.....	4.50	.....	4.50	.....	4.50	4.50	4.50
Live, 325 lb bbls wks...100 lb.	.....	1.05	.....	1.05	.....	1.05	1.05	1.05
Lime Salts, see Calcium Salts								
Lime-Sulfur soln bbls....gal.	.15	.17	.15	.17	.15	.17	.15	.17
Lithopone, 400 lb bbls 1c-1 wks ....lb.	.04¾	.05	.04¾	.05	.04¼	.05	.04¼	.05¾
Logwood, 51°, 600 lb bbls....lb.	.05	.08	.05	.08	.07	.08	.07	.08½
Chips, 150 lb bags....lb.	.03	.03½	.03	.03½	.03	.03½	.03	.03½
Solid, 50 lb boxes....lb.	.08	.12½	.08	.12½	.12	.12½	12½	.12½
Sticks....ton	24.00	26.00	24.00	26.00	24.00	26.00	24.00	26.00
Madder, Dutch....lb.	.22	.25	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl...ton	50.00	60.00	50.00	60.00	50.00	60.00	50.00	60.00

3 POINT QUALITY . . . . *Mercurial Ointments*

1: Completely dispersed mercury.

2: Free from rancid odor.

3: Mercury content nearer maximum allowed by U. S. P.

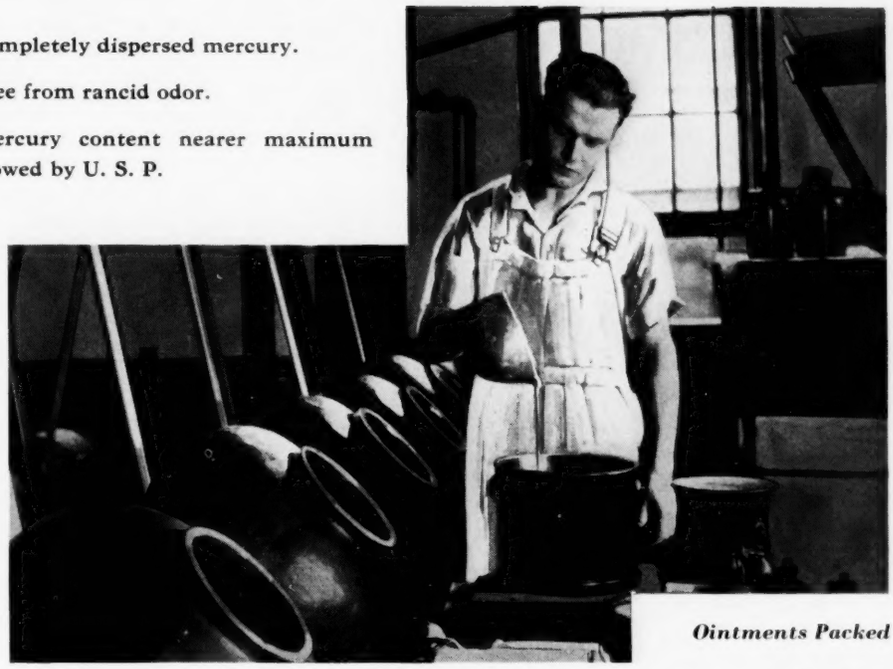

Illustration shows the mills where these Mallinckrodt ointments are made.

Two Grades

1: Mercurial Ointment U.S.P. Stronger (½Mercury) 49-51% Hg.

2: Mercurial Ointment U.S.P. Metal (Blue Ointment) 29-31% Hg.

•.•

Other Mercury Salts

Calomel
Mercury Oxide Red
Corrosive Sublimate
White Precipitate
(Mercury Amoniated)
Mercury Oxide Yellow
and others

Ointments Packed in 25 lb. pails and smaller

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Standard Quality

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

Fish Scrap — The gradual decline in the use of this material by fertilizer mixers forced down the price to a new low level in July.

Intermediates — The reported improvement in conditions in various textile centers apparently did not have any immediate effect on the intermediate market. Producers report a fair demand for certain items, but, generally speaking, consumers were holding shipments to immediate requirements waiting further developments.

Mercury — While denials have been made of the report that the mercury cartel had disabandoned, the severe decline of the past month would seem to indicate that the Spanish and Italian members of the cartel are not working in harmony. It has been known for some time that a great deal of dissatisfaction on quotes was likely to bring on an open break between the two factions.

Naphthalene — Despite a rather spotty demand prices were firmly held by producers.

Natural Tanstuffs — Prices were generally higher in this group of commodities in July. While some betterment in schedules of several tanning plants has been announced, the recent advances are attributed more to the low state of local stocks.

Naval Stores — Most rosin grades were off in July from the June levels in the face of very light trading both in the local market and in the primary centers. Turpentine fluctuated within very narrow limits. Buying was of a very conservative character and usually for immediate shipment. Any improvement in demand for domestic purposes is expected to raise prices quite suddenly as stocks in consumers' hands are reported as being extremely small. Improved exports of naval stores in June brought the total for the month to $1,073,088, or within $57,000 of the corresponding month last year, when shipments aggregated $1,129,282, it is disclosed by figures just compiled by the U. S. Census Bureau. Exports of rosin and turpentine were materially better than a year ago, it was revealed, shipments of gum rosin amounting to 74,744 barrels valued at $410,835, against 64,805 barrels valued at $629,436; wood rosin, 12,061 barrels valued at $70,986, against 10,747 barrels valued at $86,801; gum spirits of turpentine, 1,301,595 gallons valued at $525,457, against 536,704 gallons valued at $293,645, and wood turpentine, 54,785 gallons valued at $23,942, against 43,302 gallons valued at $20,961. Shipments of wood tar and pitch totaled 495 barrels valued at $4,250, against 1,077 barrels valued at $8,584 last

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Magnesium							
Magnesium Carb, tech, 70 lb. bags NY lb.	.05¾	.06	.05¼	.06½	.06	.06½	.06	.06½
Chloride flake, 375 lb. drs c-l wks ton	35.00	36.00	35.00	36.00	35.00	36.00	36.00	36.00
Imported shipment ton	31.75	33.00	31.75	33.00	31.75	33.00	31.75	33.00
Fused, imp., 900 lb bbls NY ton	.....	31.00	.....	31.00	.....	31.00	31.00	31.00
Fluosilicate, crys, 400 lb bbls wks lb.	.10	10½	.10	.10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb bbls lb.	.....	.42	.....	.42	.....	.42	.42	.42
Heavy, 250 lb bbls lb.	.....	.50	.....	.50	.....	.50	.50	.50
Peroxide, 100 lb cs lb.	1.00	1.25	1.00	1.25	1.00	1.25	1.00	1.25
Silicofluoride, bbls lb.	.09¾	.10½	.09¾	.10½	.09¾	.10½	.09¾	.10½
Stearate, bbls lb.	.24	.26	.24	.26	.24	.26	.25	.26
Manganese Borate, 30%, 200 lb bbls lb.	.15	.16	.15	.19	.....	.19	.19	.19
Chloride, 600 lb casks lb.	.07	.08	.07	.08½	.07½	.08½	.07½	.08½
Dioxide, tech (peroxide) drs lb.	.03½	.06	.03½	.06	.03½	.06	.03½	.06
Manganese Ore, cents per unit ...	.18	.23	.18	.23	.....	.....	.....	.....
Sulfate, 550 lb drs NY lb.	.07	.08	.07	.08	.07	.08	.07	.08
Mangrove 55%, 400 lb bbls ... lb.	.....	.04	.....	.04	.03½	.04	.03½	Nom.
Bark, African ton	23.00	23.50	23.00	25.00	23.00	29.75	29.75	33.00
Marble Flour, bulk ton	14.00	15.00	14.00	15.00	14.00	15.00	14.00	15.00
Mercurous chloride lb.	.82	.87	.82	.93	.93	2.05	2.05	2.05
Mercury metal ..... 76 lb flask	51.00	52.00	51.00	74.50	64.00	106.00	106.00	124.50
Meta-nitro-aniline lb.	.67	.69	.67	.69	.67	.69	.67	.69
Meta-nitro-para-toluidine 200 lb. bbls lb.	1.40	1.55	1.40	1.55	1.40	1.55	1.50	1.55
Meta-phenylene-diamine 300 lb. bbls lb.	.80	.84	.80	.84	.80	.84	.80	.84
Meta-toluene-diamine, 300 lb. bbls lb.	.67	.69	.67	.69	.67	.69	.67	69
Methanol								
Methanol, (Wood Alcohol)								
95% tanks gal.	.33	.35	.33	.35	.33	.37	.35	.48
97% tanks gal.	.34	.39	.34	.39	.34	.43	.39	.49
Pure, Synthetic drums cars gal.	.39½	.41½	.39½	.41½	.39½	.42½	.42½	.50
Synthetic tanks gal.	.....	.35½	.....	.35½	.35½	.40½	.40½	.50
Methyl Acetate, drums ..... gal.	.17	.17½	.17	.17½	.....	Nom.	Nom.	Nom.
Acetone, drums gal.	.49	.51	.49	.55	50	.70	.65	.77
Anthraquinone lb.	.85	.95	.85	.95	.85	.95	.70	.85
Cellosolve, (See Ethylene Glycol Mono Methyl Ether)	.....	.....	.....	.....	.....	.....	.....	.....
Chloride, 90 lb cyl lb.	.45	.45	.45	.45	.45	.45	.45	.45
Furoate, tech., 50 gal. dr. .. lb.	.....	.50	.....	.50	.....	.50	.50	.50
Mica, dry grd. bags wks ..... lb.	65.00	80.00	65.00	80.00	65.00	80.00	65.00	80.00
Wet, ground, bags wks ..... lb.	110.00	115.00	110.00	115.00	110.00	115.00	110.00	115.00
Michler's Ketone, kegs ..... lb.	.....	3.00	.....	3.00	.....	3.00	3.00	3.00
Monochlorobenzene, drums see, Chlorobenzene, mono ..... lb.								
Monomethylparaminosulfate 100 lb drums lb.	3.75	4.00	3.75	4.00	3.75	4.00	3.75	4.00
Montan Wax, crude, bags .... lb.	.05	.06	.05	.07	.05½	.07	.06	.07
Myrobalans 25%, liq bbls .... lb.	.03¾	.04½	.03¾	.04½	.03¾	.04½	.03¾	.04½
50% Solid, 50 lb boxes ..... lb.	.05	.05½	.05	.05½	.05	.05½	.05	.05½
J1 bags ton	34.00	35.00	34.00	35.00	34.00	35.00	34.00	41.00
J2 bags ton	.....	18.50	15.25	18.50	15.50	22.50	19.75	26.50
R2 bags ton	.....	18.00	14.75	17.50	16.00	20.00	19.00	27.50
Naphtha, v.m.& p. (deodorized) tanks gal.	.09½	.10	.09½	.10	.....	.....	.....	.....
Naphthalene balls, 250 lb bbls wks lb.	.....	.05½	.03¾	.05½	.03¾	.04¾	.03¾	.05½
Crushed, chipped bgs wks .. lb.	.....	.04½	.....	.04½	.....	.04	.04	.04½
Flakes, 175 lb bbls wks ..... lb.	.....	.03¾	.....	.03¾	.....	.03¾	.03¾	.05
Nickel Chloride, bbls kegs .... lb.	.18	.20	.18	.20	.18	.21	.20	.21
Oxide, 100 lb kegs NY ..... lb.	.35	.37	.35	.40	.37	.40	.37	.40
Salt bbl. 400 bbls lb NY ... lb.	.10½	.13	.10½	.13	.10½	.13	.10½	.13
Single, 400 lb bbls NY ..... lb.	.10½	.12	.10½	.12	.10½	.12	.10½	.13
Metal ingot lb.	.35	.35	.35	.35	.35	.....	.....	.....
Nicotine, free 40%, 8 lb tins, cases lb.	1.25	1.30	1.25	1.30	1.25	1.30	1.25	1.30
Sulfate, 10 lb tins lb.	.88½	.90	.88½	1.20	.98½	1.20	.98½	1.20
Nitre Cake, bulk ton	10.00	12.00	10.00	12.00	12.00	14.00	12.00	18.00
Nitrobenzene, redistilled, 1000 lb drs wks lb.	.09	.09½	.09	.09½	.09	.09½	.09	.09½
Nitrocellulose, c-l-l-cl, wks. .. lb.	.25	.36	.25	.36	.25	.36	.25	.36
Nitrogenous Material, bulk unit	1.45	1.50	1.35	1.55	1.50	2.70	2.50	3.40
Nitronaphthalene, 550 lb bbls lb.	.....	.25	.....	.25	.....	.25	.25	.25
Nitrotoluene, 1000 lb drs wks lb.	.14	.15	.14	.15	.14	.15	.14	.15
Nutgalls Aleppy, bags ..... lb.	.....	.18	.....	.18	.16	.18	.16	.16½
Chinese, bags lb.	.17	.18	.17	.18	.17	.18	.12	.13
Oak Bark, ground ton	30.00	35.00	30.00	35.00	30.00	35.00	30.00	35.00
Whole ton	20.00	23.00	20.00	23.00	20.00	23.00	20.00	23.00
Orange-Mineral, 1100 lb casks NY lb.	.....	.10	.09½	.10	.10½	.13	.11½	.13
Orthoaminophenol, 50 lb kgs .. lb.	2.15	2.25	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs .... lb.	2.50	2.60	2.50	2.60	2.50	2.60	2.50	2.60
Orthochlorophenol, drums .... lb.	.50	.65	.50	.65	.50	.65	.50	.65
Orthocresol, drums lb.	.13	.15	.13	.22	.18	.25	.18	.35
Orthodichlorobenzene, 1000 lb. drums lb.	.07	.10	.07	.10	.07	.10	.07	.10
Orthonitrochlorobenzene, 1200 lb drs wks lb.	.28	.29	.28	.29	.28	.33	.30	.33
Orthonitrotoluene, 1000 lb drs wk lb.	.16	.18	.16	.18	.16	.18	.16	.18
Orthonitrophenol, 350 lb dr. .. lb.	.85	.90	.85	.90	.85	.90	.85	90
Orthotoluidine, 350 lb bbl lc-l lb.	.20	.22	.20	.22	.25	.30	.25	.30

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

year, and other gums and rosins totaled 296,283 pounds valued at $37,618, against 391,592 pounds valued at $89,855. June production of naval stores by steam distillation and solvent treatment of wood and stocks of these products on hand June 30, according to data collected by the producers' committee, through Arthur Langmeier, of Hercules Powder, secretary, were as follows:

Production

	Rosin, 500-lb. barrels	*Gallons Turpentine*	*Pine oil*
Month of June	29,483	241,338	189,752
Total from April 1, 1932	86,523	719,652	552,501
Stocks at Plants			
Total June 30, 1932	96,314	278,001	.....
March 31, 1932	90,540	291,773	.....
Change	+5,774	—13,772	.....

Note:—Rosin production and stocks include all grades of wood rosin.

Nickel Salts — The plating trade was still showing but few signs of greater activity, with the result that the demand for single and double nickel salts and all plating chemicals generally was considerably below normal.

Phenol — Producers reported more activity on the part of small consumers with the result that the total volume shipped exceeded June by a slight margin.

Potash — The market remained quiet during the month. At the turn of the month the 6 per cent discount on orders for imported salts placed prior to Aug. 1 was removed, as was also the 7 per cent discount on domestic potash for July shipments. The discounts on imported salts are as follows:—On orders with specifications placed prior to Sept. 1 for September shipment, 5 per cent; prior to Oct. 1 for shipment in equal monthly quantities October to December, inclusive, 4 per cent; prior to Oct. 1 for October shipment, 4 per cent; prior to Nov. 1 for November shipment, 3 per cent; prior to Dec. 1 for shipment during December, January or February, 2 per cent. Orders placed on and after Dec. 1 for any shipment between Dec. 1, 1932, and April 30, 1933, list prices apply without discount. Discounts on domestic muriate are as follows:—For shipment in August, 6 per cent; September, 5 per cent; October, 4 per cent; November, 3 per cent, and December, 2 per cent. A discount of 5½ per cent is allowed on domestic 25 per cent manure salt throughout the season. That discount also applies on 30 per cent manure salt and muriate of potash which is offered by one domestic producer for delivery after September. Total sales of German potash in the first five months of 1932 were about 16 per cent and 34 per cent respectively under the corresponding periods of 1931 and 1930 and amounted to 480,619 metric tons K_2O. This compared with 570,953

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Orthonitroparachlorphenol, tins ..... lb.	.70	.70	.75	.70	.75	.70	.75
Osage Orange, crystals ..... lb.	.16	.16	.17	.16	.17	.16	.17
51 deg. liquid ..... lb.	.06	.06	.06	.07	.07	.07	.07
Powdered, 100 lb bags ..... lb.	.14½	.14½	.15	.14½	.15	.14½	.15
Paraffin, refd, 200 lb cs slabs							
123-127 deg. M. P. ..... lb.	.02¾	.02¾	.03	.03	.03½	.03	.03½
128-132 deg. M. P. ..... lb.	.03¼	.03¼	.....	.03¼	.03¼	.03¼	.03¼
133-137 deg. M. P. ..... lb.	.04	.04	.04	.04¼	.04¼	.04¼	.04¼
Para Aldehyde, 110-55 gal drs. lb.	.20½	.20½	.23	.20½	.23	.20½	.23
Aminoacetanilid, 100 lb bg. lb.	.52	.52	.60	.52	.60	.52	1.05
Aminohydrochloride, 100 lb. kegs ..... lb.	1.25	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kegs ... lb.	.78	.78	.80	.82	.86	.92	1.02
Chlorophenol, drums ..... lb.	.50	.50	.65	.50	.65	.50	.65
Coumarone, 330 lb drums .. lb.	.....	.....	.....	.....	.....	.....	.....
Cymene, refd, 110 gal dr. gal.	2.25	2.25	2.50	2.25	2.50	2.25	2.50
Dichlorobenzene, 150 lb bbls wks ..... lb.	.15½	.15½	.16	.15½	.20	.17	.20
Nitroacetanilid, 300 lb bbls. lb.	.45	.45	.52	.45	.55	.50	.55
Nitroaniline, 300 lb bbls wks ..... lb.	.48	.48	.55	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb drs wks ..... lb.	.23	.23	.26	.23	.26	.23	.26
Nitro-orthotoluidine, 300 lb. bbls ..... lb.	2.75	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol 185 lb bbls .... lb.	.45	.45	.50	.45	.50	.45	.50
Nitrosodimethylaniline, 120 lb bbls ..... lb.	.92	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls ... lb.	.29	.29	.31	.29	.31	.29	.31
Phenylenediamine, 350 lb bbls ..... lb.	1.15	1.15	1.20	1.15	1.20	1.15	1.20
Toluenesulfonamide, 175 lb bbls ..... lb.	.70	.70	.75	.70	.75	.70	.75
Toluenesulfonchloride, 410 lb bbls wks ..... lb.	.20	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls wk .. lb.	.42	.42	.43	.40	.44	.38	.40
Paris Green, Arsenic Basis 100 lb kegs ..... lb.	.....	.24	.24	.27	.....	.27	.27
250 lb kegs ..... lb.	.....	.23	.23	.25	.25	.26	.25
Persian Berry Ext., bbls ..... lb.	.25	Nom	.25	Nom.	.25	Nom.	.25	Nom.
Pentasol (see Alcohol, Amyl) ...							
Pentasol Acetate (see Amyl Acetate)							
Petrolatum, Green, 300 lb bbl. lb.	.02	.02	.02	.02	.02	.02	.02
Phenol, 250-100 lb drums .... lb.	.14¼	.14¼	.15	.14½	.15	.14¾	.15
Phenyl-Alpha-Naphthylamine, 100 lb kegs ..... lb.	.....	1.35	.....	1.35	.....	1.35	1.35	1.35
Phenylhydrazine Hydrochloride ..... lb.	2.90	3.00	2.90	3.00	2.90	3.00	2.90	3.00
Phosphate							
Phosphate Acid (see Superphosphate)							
Phosphate Rock, f.o.b. mines							
Florida Pebble, 68% basis. ton	3.10	3.25	3.10	3.25	3.10	3.25	3.00	3.15
70% basis ..... ton	3.75	3.90	3.75	3.90	3.75	3.90	3.75	4.00
72% basis ..... ton	4.25	4.35	4.25	4.35	4.25	4.35	4.25	4.50
75-74% basis ..... ton	5.25	5.50	5.25	5.50	5.25	5.50	5.25	5.50
75% basis ..... ton	.....	5.75	.....	5.75	.....	5.75	5.75	5.75
77-80% basis ..... ton	.....	6.25	.....	6.25	.....	6.25	6.25	6.25
Tennessee, 72% basis ..... ton	.....	5.00	.....	5.00	.....	5.00	5.00	5.00
Phosphorous Oxychloride 175 lb cyl ..... lb.	.18	.18	.20	.18	.20	.18	.25
Red, 110 lb cases ..... lb.	.43	.43	.46	.42	.46	.37½	.42
Yellow, 110 lb cases wks. lb.	.27½	.27½	.32	.37½	.31	.37½	.31	.37½
Sesquisulfide, 100 lb cs ..... lb.	.38	.38	.44	.38	.44	.44	.44
Trichloride, cylinders ..... lb.	.18	.18	.20	.18	.20	.18	.25
Phthalic Anhydride, 100 lb bbls wks ..... lb.	.15	.15	.16	.15	.16	.15	.20
Pigments Metallic, Red or brown bags, bbls, Pa. wks ..... ton	37.00	37.00	45.00	37.00	45.00	37.00	45.00
Pine Oil, 55 gal drums or bbls							
Destructive dist ..... lb.	.59	.59	.63	.61	.64	.63	.64
Prime bbls ..... bbl.	8.00	8.00	10.60	8.00	10.60	8.00	10.60
Steam dist. bbls ..... gal.	.59	.61	.54	.61	.54	.70	.65	.70
Pitch Hardwood ..... wks ..... ton	20.00	25.00	20.00	35.00	5.00	45.00	35.00	45.00
Plaster Paris, tech, 250 lb bbls ..... bbl.	3.30	3.50	3.30	3.50	3.30	3.50	3.30	3.50
Platinum, Refined ..... oz.	37.50	38.00	37.50	38.00	38.00	38.00	.....	.....
Potash							
Potash, Caustic, wks, solid ... lb.	.06¼	.06¼	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾
flake ..... lb.	.0705	.08	.0705	.08	.0705	.08	.0705	.08
Potash Salts, Rough Kainit							
12.4% basis bulk ..... ton	.....	9.20	.....	9.20	.....	9.20	9.10	9.20
14% basis ..... ton	.....	9.70	.....	9.70	.....	9.70	9.60	9.70
Manure Salts							
20% basis bulk ..... ton	.....	12.00	12.00	12.65	.....	12.65	12.50	12.65
30% basis bulk ..... ton	.....	19.15	.....	19.15	.....	19.15	18.95	19.15
Potassium Acetate ..... lb.	.27	.28	.27	.28	.27	.30	.27	.30
Potassium Muriate, 80% basis bags ..... ton	.....	37.15	.....	37.15	.....	37.15	36.75	37.15
Pot. & Mag. Sulfate, 48% basis bags ..... ton	.....	27.80	.....	27.80	.....	27.80	27.50	27.80
Potassium Sulfate, 90% basis bags ..... ton.	.....	47.50	47.50	48.25	....	48.25	47.75	48.25
Potassium Bicarbonate, USP, 320 lb bbls ..... lb.	.07¾	.09	.07¾	.09	.07¾	.10	.09¼	.10
Bichromate Crystals, 725 lb casks ..... lb.	.08	.08¼	.08	.08¼	.08	.09	.08¾	.09¼
Powd., 725 lb cks wks .... lb.	.13	.13¼	.13	13¼	.13	.13	.13	.13¼

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

tons in 1931, and 733,149 tons in 1930. Based upon the results of the first five months and in view of present and prospective trends of the trade, it is estimated that total German deliveries of potash for the entire year 1932 will amount to between 800,000 and 850,000 tons K_2O, compared with 964,000 tons for all 1931, which year showed a decrease of 29 per cent from total sales of 1,357,000 tons K_2O recorded for 1930. The contraction of almost 16 per cent in volume of total German potash sales this year is due to smaller domestic sales and especially to a marked drop in exports, which declined about 23 per cent from the level of 1931. Total exports of raw salts in the first four months of this year amounted to 153,519 tons, compared with 193,315 tons and 327,913 tons in the same period of 1931, and 1930, respectively; exports of compounds (potassium sulfate, potassium chloride, and potassium magnesium sulfate) fell to 61,056 tons, from 112,907 and 163,690 tons, respectively. The heavy decline in exports is due not only to decreased consumption, but also to rising production in other countries coupled with increasing restrictions placed upon imports by many important consuming countries.

Potash Caustic—Importers and domestic producers agreed that some slight improvement in demand had occurred in the past fortnight, but buyers were still purchasing in most instances from hand-to-mouth. Exports of caustic potash from Germany in recent years were as follows (in metric tons): 1929, 38,108; 1930, 31,897; 1931, 31,742. Consignments in 1931 were: Belgium, 6,719 tons; Netherlands, 4,767; Denmark, 3,827; U. S., 3,615; Sweden, 2,669; Great Britain, 2,450; Italy, 2,167; Switzerland, 1,329; Norway, 1,157; Austria, 393; Japan, 379.

Phosphates — Bone phosphate continued to advance with the improvement in hog prices. Phosphate rock demand remained quiet with prices held at previous levels. A report just received from the Bureau of Mines, gives final figures covering production, shipments, exports, imports, and apparent consumption of phosphate rock for the calendar year 1931, with comparisons for previous years. This report shows that, as compared with 1930, there was a curtailment in demand of phosphate rock in 1931 of 41 per cent and a decrease in exports of 23 per cent. Total mine production and shipments fell 35 per cent below the relatively high record made in 1930, and the total value of all domestic phosphate rock sold in 1931 dropped 34 per cent as compared with 1930.

	Current Market		1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Binoxalate, 300 lb bbls.....lb.	.14	.17	.14	.17	.14	.17	.14	.17
Bisulfate, 100 lb kegs.....lb.	.16	.30	.16	.30	.16	.30	.30	.30
Carbonate, 80-85% calc. 800 lb casks.....lb.	.....	.05	.0475	.05	.04¾	.07½	.05½	.05¾
Chlorate crystals, powder 112 lb keg wks.....lb.	.08	.08½	.08	.08½	.08	.08½	.08	.09
Chloride, crys bbls.....lb.	.04	.04¾	.04	.04¾	.04	.06	.05½	.06
Chromate, kegs.....lb.	.23	.28	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb. cases.....lb.	.50	.57½	.50	.57½	.55	.57½	.55	.57½
Metabisulfite, 300 lb. bbl...lb.	.10½	.11	.10½	.13	.11	.13	.12	.13
Oxalate, bbls.....lb.	.16	.24	.16	.24	.20	.24	.20	.24
Perchlorate, casks wks.....lb.	.09	.11	.09	.11	.09	.12	.11	.12
Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.16	.16½	.16	.16½	.16	.16½	.16	.16½
Prussiate, red, 112 lb keg...lb.	.....	.38½	.....	.38½	.35	.40	.38	.40
Yellow, 500 lb casks.....lb.	.16½	.17	.16½	.21	.18½	.21	.18½	.21
Tartrate Neut, 100 lb keg..lb.	.....	.21	.....	.21	.....	.21	.21	.21
Titanium Oxalate, 200 lb bbls .....lb.	.21	.23	.21	.23	.21	.23	.21	.23
Propane, group 3, tanks.....	.....	.07	.....	.....	.....	.....	.....	.....
Propyl Furoate, 1 lb tins.....lb.	.....	5.00	.....	5.00	.....	5.00	5.00	5.00
Pumice Stone, lump bags.....lb.	.04	.05	.04	.05	.04	.05	.04	.05
250 lb bbls.....lb.	.04½	.06	.04½	.06	.04½	.06	.04½	.06
Powdered, 350 lb bags.....lb.	.02½	.03	.02½	.03	.02½	.03	.02½	.03
Putty, commercial, tubs..100 lb.	2.00	2.25	2.00	2.45	2.35	2.45	.03½	.03½
Linseed Oil, kegs.....100 lb.	3.40	3.50	3.40	4.75	4.00	4.75	.05½	.05½
Pyridine, 50 gal drums.....gal.	.85	.95	.85	1.25	1.50	1.75	1.50	1.75
Pyrites, Spanish cif Atlantic ports bulk.....unit	.12	.13	.12	.13	.12	.13¾	.13	.13¾
Quebracho, 35% liquid tks....lb.	.02	.02½	.02	.03	.02¼	.04	.02½	.04
450 lb bbls c-l.....lb.	.02½	.02½	.02½	.03¾	.03½	.03¾	.03½	.03¾
35% Bleaching, 450 lb bbl .lb.	.04	.05½	.04	.05½	.04	.05½	.05½	.04¾
Solid, 63%, 100 lb bales cif..lb.	.02	.02½	.02	.02½	.02½	.05½	.05	.05¼
Clarified, 64%, bales.....lb.	.02½	.03	.02½	.03¼	.03¼	.05½	.05½	.05½
Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.05½	06	.05½	.06	.05½	.06
Solid, 100 lb boxes.....lb.	.09½	.13	.09½	.13	.09½	.13	.09½	.13
Bark, Rough.....ton	.....	14.00	.....	14.00	.....	14.00	14.00	14.00
Ground.....ton	34.00	35.00	34.00	35.00	34.00	35.00	34.00	35.00
R Salt, 250 lb bbls wks.....lb.	.40	.44	.40	.44	.40	.44	.40	.45
Red Sanders Wood, grd bbls..lb.	.....	.18	.....	.18	.....	.18	.18	.18
Resorcinol Tech, cans.....lb.	.65	.70	.65	.70	.65	1.25	.90	1.25
Rosin Oil, 50 gal bbls, first run .....gal.	.41	.43	.41	.45	.47	.58	.56	.58
Second run.....gal.	.45	.47	.45	.51	.51	.61	.59	.61
Rosin								
Rosins 600 lb bbls 280 lb...unit ex. yard N. Y.								
B.....	.....	3.25	3.00	3.60	3.25	4.95	5.35	7.75
D.....	.....	3.25	3.15	3.75	3.35	5.50	5.50	8.00
E.....	3.37½	3.40	3.37½	4.00	3.45	5.90	5.52½	8.17
F.....	3.40	3.45	3.40	4.10	3.70	6.20	5.55	8.45
G.....	3.45	3.52½	3.45	4.15	3.75	6.25	5.60	8.45
H.....	3.45	3.55	3.45	4.20	3.80	6.30	5.60	8.55
I.....	3.47½	3.50	3.47½	4.25	3.85	6.35	5.62½	8.58
K.....	3.60	3.70	3.60	4.65	4.10	6.45	5.62½	8.65
M.....	4.20	4.30	4.20	5.10	4.20	6.70	5.65	8.80
N.....	4.65	4.70	4.65	6.05	4.85	6.95	6.05	8.95
WG.....	5.25	5.30	5.25	6.45	6 15	8.15	6.85	9.25
WW.....	.....	5.95	5.85	6.55	6.45	8.90	7.85	9.85
Rotten Stone, bags mines....ton	23.50	24.00	20.00	23.00	24.00	20.00	18.00	30.00
Lump, imported, bbls.....lb.	.05	.07	.05	.07	.05	.07	.05	.07
Selected bbls.....lb.	.09	.12	.09	.12	.09	.12	.09	.12
Powdered, bbls.....lb.	.02	.05	.02	.05	.02	.05	.02	.05
Sago Flour, 150 lb bags.....lb.	.04½	.05	.04½	.05	.04½	.05	.04½	.05
Sal Soda, bbls wks.....100 lb.	.90	1.00	.90	1.00	.....	1.00	1.00	1.00
Salt Cake, 94-96% c-l wks. .ton	13.00	14.00	13.00	15.50	14.00	19.00	15.50	24.00
Chrome .....ton	12.00	13.00	12.00	14.50	13.00	17.00	14.50	25.00
Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06	.06½	.06	.06½	.06	.06½	.06½	.06½
Satin, White, 500 lb bbls.....lb	.....	.01½	.....	.01½	.....	.01½	.01½	.01½
Shellac Bone dry bbls.....lb.	.16	.16½	.16	.26	.26	.29	.28	.47
Garnet, bags.....lb.	.15	.16	.15	.20	.19	.26	.24	.40
Superfine, bags.....lb.	.10	.10½	.10	.14	.16	.22	.20	.39
T. N. bags.....lb.	.09	.09½	.09	.13	.14½	.17	.18	.34
Schaeffer's Salt, kegs.....lb.	.48	.50	.48	.50	.53	.57	.53	.57
Silica, Crude, bulk mines....ton	8.00	11.00	8.00	11.00	8.00	11.00	8.00	11.00
Refined, floated bags.....ton	22.00	30.00	22.00	30.00	22.00	30.00	22.00	30.00
Air floated bags.....ton	.....	32.00	.....	32.00	.....	32.00	32.00	32.00
Extra floated bags.....ton	30.00	35.00	30.00	40.00	32.00	40.00	32.00	40.00
Soapstone, Powdered, bags f. o. b. mines.....ton	15.00	22.00	15.00	22.00	15.00	22.00	15.00	22.00
Soda								
Soda Ash, 58% dense, bags c-l wks.....100 lb.	.....	1.17½	.....	1.17½	.....	1.17½	1.40	1.40
58% light, bags.....100 lb.	.....	1.15	.....	1.15	.....	1.15	1.34½	1.34½
Contract, bags c-l wks.100 lb.	.....	1.15	.....	1.15	1.15	1.15	1.32	1.32
Soda Caustic, 76% grnd & flake drums.....100 lb.	.....	2.90	.....	2.90	.....	2.90	3.00	3.35
76% solid drs.....100 lb.	.....	2.50	.....	2.50	.....	2.50	2.90	2.95
Sodium Acetate, tech....450 lb. bbls wks.....lb.	.....	.05	.04½	.05	.04½	.06	.04	.05½
Arsenate, drums.....lb.	.25	.35	.25	.35	.25	.35	.18	.19
Arsenite, drums.....gal.	.50	.75	.50	.75	.50	.75	.50	1.00
Bicarb, 400 lb bbl.....100 lb.	.....	2.25	.....	2.25	2.35	2.35	2.41	2.41

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

Red Lead — Prices on this and other lead chemicals were lowered in the second week of the month approximately ½c due to the renewed weakness in the lead market. Near the close of the month these declines were withdrawn as the metal market rose in sympathy with the general rise in commodity prices the lead salts being at the former level of the previous month. National Lead extended current prices on white lead in oil, red lead in oil, dry white lead, dry red lead and litharge to Dec. 31. An announcement to jobbers and dealers states that in the event of a reduction in the price of Dutch Boy white lead in oil, dry white lead, dry red lead and litharge prior to Dec. 31 jobbers and dealers will be protected against loss by reason of such reduction on stocks purchased on and after June 30 and remaining unsold at the time of the decline in price.

Saltcake — Producers were still reporting hand-to-mouth buying in the paper and glass industries. Despite this lack of interest prices were fairly well maintained.

Soda Ash — The fact that a large number of textile centers were reporting renewed activity created a better feeling in the trade. Shipments were slightly better than in the previous month.

Soda Caustic — The petroleum industry entered the market for larger quantities during July. Some improvement is momentarily expected in the rayon industry also. These two factors, combined with the generally improved tone in business, brought about a feeling that the next 60 days will witness still larger tonnage requirements in most of the consuming lines.

Sodium Nitrate — The renewal of the nitrogen cartel after a year of open competition adds an entirely different angle to the nitrogen situation. The natural nitrate producers have not as yet named prices for the coming year and this question may be one of the several details that remain to be cleared up by the cartel managers. It is thought likely that announcement of the price on nitrate may be withheld for several weeks. With the exception of the large increase in ammonium sulfate, imports of important fertilizer materials were much smaller for June, 1932, while exports of fertilizer during June were 58 per cent of those for last June, according to the N. F. A. Imports of fertilizer materials during the first half of 1932 amounted to about 59 per cent of the imports for the first half of 1931 and 41 per cent for the first half of 1930, or 12 per cent of 1931 and 11 per cent of 1930. Less than 45,000 tons of sodium

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Bichromate, 500 lb cks wks lb.	.05	.05¾	.05	.05¾	.05	.07½	.07	.07½
Bisulfite, 500 lb bbl wks lb.	.....	.04	.....	.04	.....	.04	.04	.04
Chlorate, ... wks lb.	.05¾	.07¾	.05½	.07¾	.05¾	.07¾	.05¾	.08
Chloride, technical ton	12.00	13.00	12.00	13.00	12.00	13.00	12.00	13.00
Cyanide, 96-98%, 100 & 250 lb drums wks lb.	.15½	.16	.15½	.17	.16	.17	.16	.20
Fluoride, 300 lb bbls wks lb.	.07	.07½	.07	.07½	.07	.08½	.08½	.09
Hydrosulfite, 200 lb bbls f. o. b. wks lb.	.22	.24	.22	.24	.22	.24	.22	.24
Hypochloride solution, 100 lb cbys lb.	.....	.05	.....	.05	.....	.05	.05	.05
Hyposulfite, tech, pea cyrs 375 lb bbls wks 100 lb.	2.40	3.00	2.40	3.00	2.40	3.00	2.40	3.00
Technical, regular crystals 375 lb bbls wks 100 lb.	2.40	2.65	2.40	2.65	2.40	2.65	2.50	2.65
Metanilate, 150 lb bbls lb.	.44	.45	.44	.45	.44	.45	.44	.45
Metasilicate, c-l, wks 100 lb.	.....	2.85	2.85	4.00	.....	4.00	.....	.....
Monohydrate, bbls lb.	.....	.02½	.....	.02½	.....	.02½	.02½	.02½
Naphthionate, 300 lb bbl lb.	.52	.54	.52	.54	.52	.54	.52	.57
Nitrate, 92%, crude, 200 lb bags c-1 NY 100 lb.	.....	1.73½	.....	1.73½	1.73½	2.07	1.99	2.22½
Nitrite, 500 lb bbls spot lb.	.07½	.08	.07½	.08	.07½	.08	.07	.08
Orthochlorotoluene, sulfonate, 175 lb bbls wks lb	.25	.27	.25	.27	.25	.27	.25	.27
Perborate, 275 lb bbls lb.	.17	.19	.17	.20	.18	.20	.18	.20
Phosphate, di-sodium, tech. 310 lb bbls 100 lb.	2.40	2.50	2.40	2.75	2.50	3.00	2.65	3.25
tri-sodium, tech, 325 lb bbls 100 lb.	.....	3.20	.....	3.20	3.15	3.50	3.25	4.00
Picramate, 100 lb kegs lb.	.69	.72	.69	.72	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl wks lb.	.11½	.12	.11½	.12	.11½	.12	.11½	12½
Pyrophosphate, 100 lb keg lb.	.15	.20	.15	.20	.15	.20	.15	.20
Silicate, 60 deg 55 gal drs, wks 100 lb.	1.65	1.70	1.65	1.70	1.65	1.70	1.6	1.70
40 deg 55 gal drs, wks 100 lb.	.....	.75	.....	.75	.75	1.00	.70	.80
Silicofluoride, 450 lb bbls NY lb.	.06	.06¼	.05½	.06¾	.04	.04¾	.04	.05½
Stannate, 100 lb drums lb.	.17	.17½	.17	.19	.18	.26	.24	.43
Stearate, bbls lb.	.20	.25	.20	.25	.20	.25	.20	.29
Sulfanilate, 400 lb bbls lb.	.16	.18	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-1 wks lb.	.02	.02¼	.02	.02¼	.02	.02¼	.02½	.02¼
Sulfide, 80% crystals, 440 lb bbls wks lb.	.02½	.02½	.02½	.02¾	.02½	.02¾	.02½	.02¾
62% solid, 650 lb drums 1c-1 wks lb.	.03	.03¼	.03	.03¼	.03	.03¼	.03	.03¼
Sulfite, crystals, 400 lb bbls wks lb.	.03	.03¼	.03	.03¼	.03	.03¼	.03	.03¼
Sulfocyanide, bbls lb.	.28	.35	.28	.35	.28	.35	.28	.35
Tungstate, tech, crystals, kegs lb.	.60	.70	.60	.88	.80	.88	.81	.88
Solvent Naphtha, tanks wks gal.	.26	.28	.26	.28	.24	.38	.30	.40
Spruce, 25% liquid, bbls lb.	.....	.01½	.....	.01	.01	.01¾	.01¾	.01¾
25% liquid, tanks wks lb.	.....	.01	.....	.01	.....	.01	.01	.01
50% powd, 100 lb bag wks lb.	.02	.02½	.02	.02½	.02	.02½	.02	.02½
Starch, powd., 140 lb bags 100 lb.	2.34	2.44	2.34	2.67	2.57	3.20	3.42	4.02
Pearl, 140 lb bags 100 lb.	2.54	2.64	2.54	2.84	2.57	3.00	3.32	3.92
Potato, 200 lb bags lb.	.03½	.04	.03½	.06	.05½	.06	.05½	.06½
Imported bags lb.	.04½	.05	.04	.06½	.05¾	.06½	.05¾	.06½
Soluble lb.	.08	.08½	.08	.08½	.08	.08½	.08	.08½
Rice, 200 lb bbls lb.	.07½	.08½	.07½	.10	.09	.10	.09	.10
Wheat, thick bags lb.	.06	.06½	.06	.07	.06½	.07	.06½	.07
Thin bags lb.	.09½	.10	.09½	.10	.09½	.10	.09½	.10
Strontium carbonate, 600 lb bbls wks lb.	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½
Nitrate, 600 lb bbls NY lb.	.07	.07½	.07	.07½	.07	.09½	.09	.09½
Peroxide, 100 lb drs lb.	.....	1.25	.....	1.25	.....	1.25	1.25	1.25

Sulfur

Sulfur Brimstone, broken rock, 250 lb bag c-1 100 lb.	.....	2.05	.....	2.05	.....	2.05	2.05	2.05
Crude, f. o. b. mines ton	18.00	19.00	18.00	19.00	18.00	19.00	18.00	19.00
Flour for dusting 99½%, 100 lb bags c-1 NY 100 lb.	.....	2.40	.....	2.40	.....	2.40	2.40	2.40
Heavy bags c-1 100 lb.	.....	2.50	.....	2.50	.....	2.50	2.50	2.50
Flowers, 100%, 155 lb bbls c-1 NY 100 lb.	.....	3.45	.....	3.45	.....	3.45	3.45	3.45
Roll, bbls 1c-1 NY 100 lb.	2.65	2.85	2.65	2.85	2.65	2.85	2.65	2.85
Sulfur Chloride, red, 700 lb drs wks lb.	.05	.05½	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb drs wks lb.	.03½	.04½	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl lb.	.07	.07½	.07	.07½	.07	.07½	.07	.07½
Extra, dry, 100 lb cyl lb.	.10	.12	.10	.12	.10	.12	.10	.12
Sulfuryl Chloride, lb.	.15	.40	.15	.40	.15	.40	.10	.65
Talc, Crude, 100 lb bgs NY ton	12.00	15.00	12.00	15.00	12.00	15.00	12.00	15.00
Refined, 100 lb bgs NY ton	16.00	18.00	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bags NY ton	18.00	22.00	18.00	22.00	18.00	22.00	18.00	22.00
Refined, white, bags ton	35.00	40.00	35.00	40.00	35.00	40.00	35.00	40.00
Italian, 220 lb bags NY ton	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00
Refined, white, bags ton	50.00	55.00	50.00	55.00	50.00	55.00	50.00	55.00
Superphosphate, 16% bulk, wks ton	7.50	8.00	7.50	8.00	7.50	9.00	8.00	9.50
Triple bulk, wks unit	.....	.65	.....	.65	.....	.65	.65	.65
Tankage Ground NY unit	.....	1.50&10	1.30&10	1.50&10	1.50	3.20&10	3.20&10	4.00&10
High grade f.o.b. Chicago unit	.....	1.60&10	.....	1.50&10	1.50	3.25&10	3.25&10	3.85&10
South American cif unit	.....	2.25&10	.....	2.25&10	2.00	3.40&10	3.40&10	4.25&10
Tapioca Flour, high grade bgs lb.	.03½	.05	.03½	.05	.03½	.05	.03	.05½
Medium grade, bags lb.	.03	04	.03	04	.03	.04	.02½	.04½
Tar Acid Oil, 15%, drums gal.	.21	.22	.21	.22	.21	.25	.24	.27
25% drums gal.	.23	.24	.23	.24	.23	.28	.26	.30

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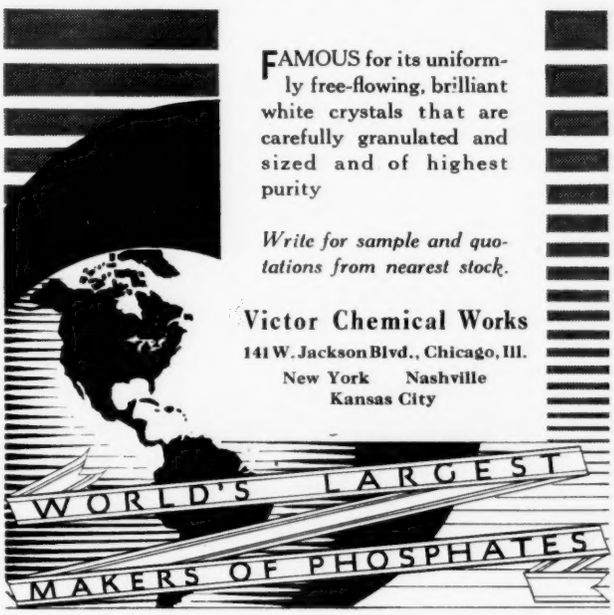

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nitrate came into the country, against 365,150 tons for the first half of 1931, and 412,612 tons for the first half of 1930. In contradistinction, ammonium sulfate imports totaled 165,441 tons, compared with 33,911 tons imported during the first half of 1931 and 3,010 tons for the first half of 1930. The imports of all other nitrogenous materials were much smaller than for the first half of 1931. Imports of potash materials for the first half of 1932 approximated 60 per cent of those of 1931 and about 30 per cent of those for 1930. Exports of fertilizer materials during the first half of 1932 were 70 per cent of those for the same months of 1931 and 52 per cent of those for the first half of 1930. Phosphate rock exports were 75 per cent of 1931 and 53 per cent of 1930. Superphosphate exports amounted to only 18 per cent of the exports for the same months of 1931 and about 13 per cent of those for the first half of 1930. Exports of prepared fertilizer mixtures for the first six months totaled but 568 tons, against 3,402 tons for the first half of 1931 and 29,904 tons for the first half of 1930.

Sodium Phosphate — Producers announced during the month a ¼c decline in carlot prices for the di salt. Rumors are in the market of the possibility of a new producer entering the field shortly. Shipments into the silk-weighting centers were smaller in July than in June, but the recently improved conditions in several textile centers are likely to change this situation in the next two or three weeks.

Sulfur — Buyers were still holding shipments to extremely low levels. The reported breakup of the Sicilian consortium may have some effect on the international market, but this is thought to be unlikely as the Italian Government has ordered the Bank of Sicily to take over the stocks amounting to 200,000 tons of sulfur and to liquidate them only over a period of six years. Also, a new effort is being made, according to advisers from abroad, to revive the consortium. It is felt that this is essential to maintenance of the firm international market conditions that have characterized the sulfur market for several years. Domestic prices were firm and unchanged. During the first five months of 1932 exports of brimstone from the U. S. totalled 16,893 long tons compared with 137,049 tons in the same period of 1931. During the same period exports of refined and ground sulfur declined materially from 7,136 to 4,063 short tons. Quantities and values of brimstone, crude, in lumps, with destinations of shipments were as follows:

	Current Market		1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Terra Alba Amer. No. 1, bgs or bbls mills	100lb.	1.15	1.75	1.15	1.75	1.15	1.75	1.15	1.75
No. 2 bags or bbls	100lb.	1.50	2.00	1.50	2.00	1.50	2.00	1.50	2.00
Imported bags	lb.	.01¼	.01¼	.01½	.01½	.01½	.01½	.01½	.01½
Tetrachlorethane, 50 gal dr	lb.	.08	.09	.08	.09½	.09	.09½	.09	.09½
Tetralene, 50 gal drs wks	lb.	.12	.13	.12	.20	.....	.20	.20	.20
Thiocarbanilid, 170 lb bbl	lb.	.25	.28½	.25	.28½	.25	.28½	.22	.28½
Tin									
Crystals, 500 lb bbls wks	lb.	.....	.22½	.22	24	.23	.28½	.25	.34
Metal Straits NY	lb.	.211	.21½	.211	.22½	.21¾	.27	.26	.38
Oxide, 300 lb bbls wks	lb.	.....	.23	.....	.23	.23	.29	.25	.42
Tetrachloride, 100 lb drs wks	lb.	.....	.151	.1465	.165	.1605	.19½	.18¼	.20½
Titanium Dioxide 300 lb bbl	lb	.19	.20	.19	.21	.20½	.22	.21	.50
Pigment, bbls	lb.	.06¾	.07	.06¾	.07¾	.06¾	.07¾	.06¾	.07¾
Toluene, 110 gal drs	gal.	.....	.35	.....	.35	.34	.35	.35	.40
8000 gal tank cars wks	gal.	.....	.30	.....	.30	.27	.30	.30	.35
Toluidine, 350 lb bbls	lb.	.88	.89	.88	.89	.88	.94	.90	.94
Mixed, 900 lb drs wks	lb.	.27	.32	.27	.32	.27	.32	.27	.32
Toner Lithol, red, bbls	lb.	.90	.95	.90	.95	.90	.95	.90	.95
Para, red, bbls	lb.	.....	.80	.....	.80	.....	.80	.80	.80
Toluidine	lb.	1.50	1.55	1.50	1.55	1.50	1.55	1.50	1.55
Triacetin, 50 gal drs wks	lb.	.32	.36	.32	.36	.32	.36	.32	.36
Trichlorethylene, 50 gal dr	lb.	.10	.10½	.10	.10½	.10	.10½	.10	.10½
Triethanolamine, 50 gal drs	lb.	.40	.42	.40	.42	.40	.42	.40	.42
Tricresyl Phosphate, drs	lb.	.25½	.26	.25½	.26	.26	.45	.33	.45
Triphenyl guanidine	lb.	.58	.60	.58	.60	.58	.60	.58	.60
Phosphate, drums	lb.	.50	.65	.50	.65	.50	.70	.60	.70
Tripoli, 500 lb bbls	100 lb.	.75	2.00	.75	2.00	.75	2.00	1.75	2.00
Tungsten, Wolframite	per unit	10.40	11.00	10.40	11.75	11.00	11.75	.....	.....
Turpentine carlots, bbls	gal.	.40½	.41	.39	.45½	.36½	.57	.41	.61½
Wood Steam dist. bbls	gal.	.42	.43	.42	.45	.38	.61	.36	.52
Urea, pure, 112 lb cases	lb	.15	.17	.15	.17	.15	.17	.15	.17
Fert. grade, bags c.i.f.	ton	.....	82.60	.....	82.60	.....	82.60	108.00	108.00
c. i. f. S. points	ton	.....	82.60	.....	82.60	.....	82.60	109.30	109.30
Valonia Beard, 42%, tannin bags	ton	.....	30.50	29.50	34.00	33.00	40.00	39.50	40.00
Cups, 30-31% tannin	ton	22.50	23.50	22.50	23.50	22.50	25.00	24.00	27.00
Mixture, bark, bags	ton	23.00	24.00	23.00	26.00	25.00	31.00	30.00	32.50
Vermillion, English, kegs	lb.	1.28	1.40	1.28	1.80	1.53	1.80	1.75	2.05
Vinyl Chloride, 16 lb cyl	lb.	.....	1.00	.....	1.00	.....	1.00	1.00	1.00
Wattle Bark, bags	ton	26.00	27.00	26.00	33.00	32.00	41.00	40.00	47.75
Extract 55%, double bags ex-dock	lb.	.05	.06½	.05	.06½	.05	.06½	.05½	.06½
Whiting, 200 lb bags, c-1 wks	100 lb.	.85	1.00	.85	1.00	.85	1.00	1.00	1.00
Alba, bags c-1 NY	ton	.....	13.00	.....	13.00	.....	13.00	13.00	13.00
Gilders, bags c-1 NY	100 lb.	.....	1.35	.....	1.35	.....	1.35	1.35	1.35
Xylene, 10 deg tanks wks	gal.	.....	.29	.....	.29	.....	.29	.28	.31
Commercial, tanks wks	gal.	.....	.26	.....	.26	.24	.30	.25	.33
Xylidine, crude	lb.	.36	.37	.36	.37	.36	.37	.37	.38

Zinc

Zinc Ammonium Chloride powd., 400 lb bbls	lb.	.05	.05½	.....	5.75	5.25	5.75	5.25	5.75
Carbonate Tech, bbls NY	lb.	.09½	.11	.09½	.11	.10½	.11	.10½	.11
Chloride Fused, 600 lb drs wks	lb.	.05	.05½	.05	.06	.05½	.06	.05½	.06
Gran., 500 lb bbls wks	lb.	.05½	.06	.05½	.06	.05½	.06	.05½	.06½
Soln 50%, tanks wks	100 lb.	2.25	3.00	2.25	3.00	2.25	3.00	2.25	3.00
Cyanide, 100 lb drums	lb.	.38	.39	.38	.39	.38	.39	.38	.41
Dithiofuroate, 100 lb dr	lb.	.....	1.00	.....	1.00	.....	1.00	1.00	1.00
Dust, 500 lb bbls c-1 wks	lb.	.....	.0435	.041	.0525	.0515	.07	.06	.11
Metal, high grade slabs c-1 NY	100 lb.	.....	2.87	2.87	3.22½	3.50	4.45	4.10	6.45
Oxide, American bags wks	lb.	.0485	.05½	.0485	.07	.06½	.07	.06½	.07½
French, 300 lb bbls wks	lb.	.08½	.11½	.08½	.11½	.09½	.11½	.09½	.11½
Perborate, 100 lb drs	lb.	.....	1.25	.....	1.25	.....	1.25	1.25	1.25
Peroxide, 100 lb drs	lb.	.....	1.25	.....	1.25	.....	1.25	1.25	1.25
Stearate, 50 lb bbls	lb.	.16	.17	.16	.22	.18½	.23	.20	.26
Sulfate, 400 bbl wks	lb.	.03	.03½	.03	.03½	.03	.03½	.03	.03½
Sulfide, 500 lb bbls	lb.	.12	.13	.12	.13½	.13	.16½	.16	.32
Sulfocarbolate, 100 lb keg	lb.	.21	.22	.21	.24	.22	.30	.28	.30
Zirconium Oxide, Nat. kegs	lb.	.02½	.03	.02½	.03	.02½	.03	.02½	.03
Pure kegs	lb.	.45	.50	.45	.50	.45	.50	.45	.50
Semi-refined kegs	lb.	.08	.10	.08	.10	.08	.10	.08	.10

Oils and Fats

Castor, No. 1, 400 lb bbls	lb.	.09½	.09½	.09½	.10½	.10	.12	.11½	.13½
No. 3, 400 lb bbls	lb.	.09	.09½	.09	.10½	.09½	.11¼	.11	.13
Blown, 400 lb bbls	lb.	.11¼	.12	.11¾	.12½	.12½	.14	.12	.15
China Wood, bbls spot NY	lb.	.05¾	.06	.05¾	.07¾	.07	.07½	.07	.13
Tanks, spot NY	lb.	.05¼	.05¼	.05	.06¾	.06	.07	.06	.11¾
Coast, tanks	lb.	.04½	.05	.04½	.06½	.05½	.06½	.05½	.10½
Cocoanut, edible, bbls NY	lb.	....	.10½	.....	.10½	.....	.10½	.10½	.10½
Ceylon, 375 lb bbls NY	lb.	.04½	.04½	.04½	.04½	.04½	.06½	.06½	.08½
8000 gal tanks NY	lb.	.03½	.03¼	.03½	.03¾	.03¾	.06	.05½	.07
Cochin, 375 lb bbls NY	lb.	.04½	.05	.04¾	.06	.05½	.07	.07½	.09½
Tanks NY	lb.	.03½	.04	.03½	.05	.04½	.05½	.07	.08½
Manila, bbls NY	lb.	.04½	.05	.04½	.05	.04½	.07	.06½	.08½
Tanks NY	lb.	.03½	.03½	.03½	.04	.03½	.05½	.05½	.07½
Tanks, Pacific Coast	lb.	.03¾	.03¼	.02½	.03½	.03	.05	.05½	.07

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - July 1932 $1.67

Country of Destination	Jan.-May, 1931 Long tons	Value
France	39,459	$934,378
Germany	29,469	695,120
Netherlands	7,304	173,944
Spain	2,536	57,068
United Kingdom	8,305	182,711
Other Europe	1,723	41,783
Canada	27,892	504,670
Mexico	2,211	48,475
Netherland West Indies	3,130	68,860
South America	2,750	57,750
Australia	1,100	24,200
New Zealand	3,685	81,070

Country of Destination	Jan.-May, 1932 Long tons	Value
France	38,609	$873,914
Germany	21,849	503,333
Netherlands	6,603	151,869
Spain	2,750	67,375
United Kingdom	9,704	212,087
Other Europe	1,607	36,720
Canada	22,959	415,289
Mexico	3,401	74,784
Netherland West Indies	3,153	69,404
South America	6,235	132,540
Australia	29,294	585,901
New Zealand	11,300	224,404

For the first time in months prices for fats and oils have shown decided resistance, and in many instances, prices advanced strongly. Particular strength occurred, of course, in the animal oils and fats due to the better hog prices. Exports of animal oils and fats for June showed a marked gain in quantity over the corresponding month last year according to figures compiled by the Dept. of Commerce. Exports of animal oils and fats last month, the department announced, totaled 50,437,612 pounds, valued at $2,538,199, against 43,277,731 pounds, valued at $3,623,810 a year ago.

Chinawood Oil — Prices advanced slightly in sympathy with the general advance in commodity markets, but actual buying was small. Conditions in China have not changed materially in the past 30 days and offerings were light. Total receipts of chinawood oil in this country during June amounted to 4,804,791 pounds, valued at $208,247, which compares with 9,484,708 pounds, valued at $528,388 imported for June, 1931. Imports of oil for the six months of 1932 totaled 39,825,150 pounds, having a value of $2,031,218, whereas for the same period of 1931, receipts aggregated 37,790,625 pounds, having a value of $2,254,456.

Linseed Oil — Curtailed buying continued to prevent the price structure for this commodity from rising in sympathy with the rather general improvement in the fats and oils industry. What purchases were made were invariably for immediate shipment. Indicative of the decline in demand are the figures showing shipments from Minneapolis for the week ending July 29, together with totals to date compared with the corresponding figures for a year ago. For the week ending July 29, 689,184 pounds were shipped against 1,040,625 in the same week in 1931. The total to date for 1932 amounts to 55,147,518 pounds against 111,090,981 pounds for the first seven months a year ago.

	Current Market	1932 Low	1932 High	1931 Low	1931 High	1930 Low	1930 High
Cod, Newfoundland, 50gal bbls ....gal.	.21	.21	.30	.26	.48	.46	.56
Cod Liver see Chemicals							
Copra, bags, N. Y.....lb.	.....	.0207	.0195	.0235	.0195	.0325	.039	.046
Corn, crude, bbls NY.....lb.	.04½	.05	.04½	.09	.05¾	.09	.08½	.10
Tanks, mills.....lb.	.03½	.03¼	.02⅞	.03½	.03⅜	.07½	.06½	.08
Refined, 375 lb bbls NY...lb.	.05½	.03	.05½	.07	.06¼	.10½	.09½	.10½
Tanks.....lb.	.05	.05¼	.05	.08¾	.08	.08¾	.08	.10
Cottonseed, crude, mill.....lb.	.....	.03	.02⅝	.03½	.03	.07	.06½	.07½
Degras, American, 50 gal bbls NY.....lb.	.02½	.03	.02½	.04	.03½	.04½	.03½	.04½
English, brown, bbls NY...lb.	.03	.03½	.03	.04	.03¾	.05	.04½	.05
Light, bbls NY .....lb.	.04	.04½	.04	.04½	.04	.05½	.05	.05½
Dog Fish, Coast Tanks.....gal.	.....	.32	.....	.32	.....	.32	.32	.34

Greases

Greases, Brown.....lb.	.....	.02⅜	.01⅜	.02⅛	.02	.04¼	.04	.06½
Yellow.....lb.	.....	.02⅜	.01⅜	.03	.02	.05	.03⅞	.07½
White, choice bbls NY.....lb	.02¾	.03	.02	.04½	.03½	.05¾	.06	.08½
Herring, Coast, Tanks.....gal.	.....	Nom.	.....	Nom.	.....	Nom.	.....	.....
Horse, bbls.....lb.	.05½	Nom.	.05¼	Nom.	.05¼	Nom.	.05½	Nom.
Lard Oil, edible, prime.....lb.	.08¼	.09	.08½	.10	.10¾	.13	.12½	.13½
Extra, bbls.....lb.	.....	.06	.05½	.07	.07	.10	.10	.12
Extra No. 1, bbls.....lb.	.05¾	.06	.05½	.07	.06½	.09¾	.09¾	.11
Linseed, Raw, five bbl lots...lb.	.061	.063	.061	.074	.077	.102	.096	.146
Bbls c-l spot.....lb.	.053	.054	.053	.066	.069	.098	.092	.142
Tanks.....lb.	.047	.05	.047	.06	.063	.092	.086	.134
Menhaden Tanks Baltimore.gal.	.12½	.13	.11½	.20	.14	.22	.21	.50
Extra, bleached, bbls NY..gal.	.38	.40	.38	.40	.38	.53	.52	.70
Light, pressed, bbls NY...gal.	.30	.31	.25	.34	.33	.38	.36	.64
Yellow, bleached, bbls NY.gal.	.33	.34	.33	.37	.30	.42	.38	.67
Mineral Oil, white, 50 gal bbls .....gal.	.40	.60	.40	.60	.40	.60	.40	.60
Russian, gal.....gal.	.95	1.00	.95	1.00	.95	1.00	.95	1.00
Neatsfoot, CT, 20° bbls NY .lb.	.12¼	.13	.12⅜	.13½	.13½	.16	.16½	.17⅛
Extra, bbls NY.....lb	.....	.06	.05½	.07	.07	.10	.09½	.11½
Pure, bbls NY.....lb.	.....	.08	.07½	.09	.09½	.12	.11½	.13½
Oleo, No. 1, bbls NY.....lb.	.05½	.06	.05½	.07	.06½	.08	.08⅛	.12½
No. 2, bbls NY.....lb.	.05½	.05¼	.04½	.06	.05½	.08	.08⅛	.11
No. 3, bbls NY.....lb.	.....	.06¼	.....	.06¼	.06¼	.09	.09	.10½
Olive, denatured, bbls NY...gal.	.57	.59	.57	.65	.59	.80	.70	1.00
Edible, bbls NY.....gal.	1.50	1.60	1.50	2.00	1.50	2.00	1.75	2.00
Foots, bbls NY.....lb.	.04½	.04½	.04½	.05	.04½	.06¾	.06	.08
Palm, Kernel, Casks.....lb.	.....	.04	.035	.04⅜	.04½	.06½	.06	.08½
Lagos, 1500 lb casks.....lb.	.03½	.03½	.03½	.05	.04	.06	.05¾	.07¾
Niger, Casks.....lb.	.03½	.03½	.03	.03½	.03½	.05½	.05½	.07½
Peanut, crude, bbls NY.....lb.	.03⅜	.03½	.02½	.04	.03¾	.05	.....	Nom.
Refined, bbls NY.....lb.	.08½	.08½	.08¼	.09	.08½	.14	.12	.15
Perilla, bbls NY.....lb.	.....	.04½	.03½	.05½	.05½	.11	.10	.14½
Tanks, Coast.....lb.	.03½	.04	.03½	.05	.05	.09	.08	.11½
Poppyseed, bbls NY.....gal.	1.60	1.70	1.60	1.75	1.70	1.75	1.70	1.75
Rapeseed, blown, bbls NY...gal.	.52	.54	.52	.70	.68	.73	.74	1.00
English, drms. NY.....gal.	.....	.75	.....	.75	.....	.75	.75	.82
Japanese, drms. NY.....gal.	.40	.42	.40	.58	.56	.58	.56	.70
Red, Distilled, bbls.....lb.	.06½	.06⅜	.06½	.07	.07⅛	.09	.08⅛	.10⅛
Tanks.....lb.	.05¾	.06	.05½	.06	.06½	.08½	.07¼	.09½
Salmon, Coast, 8000 gal tks..gal.	.15	.19	.15	.19	.19	.22	.42	.44
Sardine, Pacific Coast tks...gal.	.14	.15	.14	.17½	.17	.19	.18	.42
Sesame, edible, yellow, dos...lb.	.08½	.09	.08½	.09	.08½	.10¾	.09	.12
White, dos.....lb.	.10	.11	.10	.11	.10	.12	.10	.12½
Sod, bbls NY.....gal..	.....	.40	.....	40	.....	.40	.40	.40
Soy Bean, crude.....								
Pacific Coast, tanks.....lb.	.....	.035	.02¾	.03½	.03⅞	.08	.07	.09½
Domestic tanks, f.o.b. mills, ...lb.	.....	.035	.03	.032	.032	.07	.07	.08½
Crude, bbls NY.....lb.	.....	.04	.03½	.05	.04¼	.08	.10	.10½
Tanks NY.....lb.	.....	.03½	.03¼	.04½	.04¼	.08	.09	.09¼
Refined, bbls NY.....lb.	.045	.05	.045	.06	.058	.09	.13	.13½
Sperm, 38° CT, bleached, bbls NY.....gal.	.68	.70	.68	.70	.68	.85	.84	.85
45° CT, bleached, bbls NY gal.	.63	.65	.63	.65	.63	.80	.79	.80
Stearic Acid, double pressed dist bags.....lb.	.07½	.08	.07½	.09	08½	.11	.13½	.15
Double pressed saponified bags .....lb.	.07	.07½	.07	.07½	.08	.12	.14½	.15½
Triple, pressed dist bags..lb	.10¼	.10½	.10½	.11	.11	.14	.15½	.17
Stearine, Oleo. bbls.....lb.	.....	.05½	.03¾	.05½	.05½	.08¼	.08½	.09½
Tallow City, extra loose.....lb.	.....	.03¼	.02½	.03⅜	.02½	.04	.04½	.07⅛
Edible, tierces.....lb.	.....	.04¼	.03⅜	.04¼	.03⅜	.06	.05⅝	.09½
Tallow Oil, Bbls, c-1 NY..lb.	.06¼	.06½	.06¼	.07½	.07	.08¼	.08½	.11
Acidless, tanks NY.....lb.	.07½	.09	.07½	.09	.07⅞	.09	.08½	.10
Vegetable, Coast mats.....lb.	.06	Nom.	.06	Nom.	.06½	Nom.	.06½	Nom.
Turkey Red, single bbls.....lb.	.07	.09	.07	.09	.07	.10	.10	.12
Double, bbls.....lb.	.09	.11	.09	.11	.09	.10	.13	.16
Whale, bleached winter, bbls NY.....gal.	.....	.74	.....	.74	.....	.74	.74	.74
Extra, bleached, bbls NY..gal.	.57	.58	.57	.60	.58	77½	.76	.76
Nat. winter, bbls NY.... gal.	.51	.53	.51	.55	.53	.72	.73	.73

Index to Advertisers

Mallinckrodt Chemical Works, St. Louis, Mo. 175
Mathieson Alkali Works, New York City 99
Mechling Bros. Chemical Co., Camden, N. J. 181
Merck & Co., Rahway, N. J. 188
Monsanto Chemical Works, St. Louis, Mo. . Insert facing page 129
Mutual Chemical Co., New York City 167

National Aniline & Chemical Co., New York City
Insert facing page 144
Natural Products Refining Co., Jersey City, N. J. 110
Neuberg, William, Inc., New York City 185
Niacet Chemicals Corp., Niagara Falls, N. Y 171
Niagara Alkali Co., New York City . . . . . Insert facing page 145
Nichols Copper Co., New York City 185

Pacific Coast Borax Co., New York City 188
Pennsylvania Salt Mfg. Co., Philadelphia, Pa. 173
Pennsylvania Sugar Co., Philadelphia, Pa 103
Philadelphia Quartz Co., Philadelphia, Pa. 185
Polachek, Z. H., New York City 189

Roessler & Hasslacher Chemical Co., New York City 107

Schuylkill Chemical Co., Philadelphia, Pa. 187
Sharples Solvents Corp., Philadelphia, Pa. . Insert facing page 128
Solvay Sales Corporation, New York City . . . . . Cover 2
Standard Silicate Co., Cincinnati, O 191
Starkweather, J. U., Co., Providence, R. I. 187
Stauffer Chemical Co., New York City 105
Swann Corp., The, Birmingham, Ala 169

Texas Gulf Sulphur Co., New York City 181
Turner & Co., Joseph, New York City 187

U. S. Industrial Alcohol Co., New York City
Insert facing pages 160&161
U. S. Potash Co., New York City 183

Victor Chemical Works, Chicago, Ill 183

Warner Chemical Co., New York City 157
Wishnick-Tumpeer, Inc., New York City . . . . . Cover 4
Wood Distillers Corp., Paterson, N. J. 177

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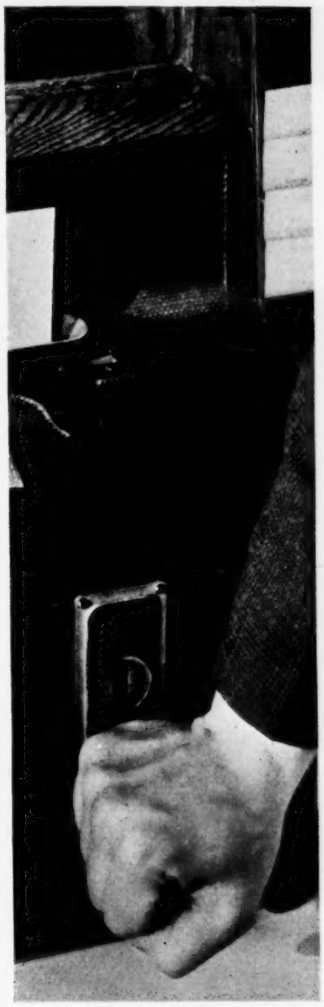

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"We"—Editorially Speaking

The Professor Armstrong whose amusing, yet thought provoking, essay on "Shifting Sands" which our readers will enjoy this month is the father of the Dr. E. F. Armstrong, Chairman of the Council of the Association of British Chemical Manufacturers who visited New York last month en route to the Imperial Conference in Ottawa. Armstrong "Pere" is one of the most distinguished and distinctive gentlemen of the old chemical school in England. He is a man of ideas—very definite ideas—which he does not hesitate to express forcefully . . .

Englishmen have often a very happy knack of expression and besides Professor Armstrong's "Shifting Sands" there is another article in this month's issue which makes good hot weather reading. Mr. Blair of the Clayton Aniline Company recently read a paper on "Dyestuffs Manufacture" before the Leathersellers College. Seldom have we read a more interesting description of how an extremely technical industry with great complications in their sales methods fits into the modern economic scheme.

Add to your collection of good yarns about chemical ignorance in high places, the ones about the banker who thought the chief use of sulfur was to make lime-sulfur, and the chemist who worked over a year on a new process to produce oxalic acid synthetically at a plant cost of 12½ cents.

At Midland, in upper Michigan, the political pot has been boiling over a new local high school which the people in a burst of economy voted down last spring. Billy Hale leaped into type with the statement that the four hundred thousand odd dollars saved was a fair measure of morons who didn't know what an education was worth. At the recent election for the School Board, Lee Doan and Mark Putnam were defeated for re-election about three to one, which raises the question—Do the morons always win, or will any officeholder up for re-election be defeated in 1932?

By nature, Theodore Swann is a salesman. As a young man, he sold electrical goods to the small storekeepers in West Virginia for the General Electric. The industrial salesman in this territory being suddenly incapacitated, he was given a passbook and sent out to interview one of the coal miner operators. He sold him everything, from two electric locomotives down to frosted bulbs for his own dining room, and jumped immediately into the industrial field. From selling power plant equipment, he moved on to selling power, thence to power plant administration, and so into the electrochemical industry. He has recently surprised the chemical world by undertaking a vigorous expansion of his chemical sales activities, which gives a peculiar meaning to the ideas he sets forth in the article he has written for this issue "Creative Chemical Selling."

If you are interested in sudden human reactions and carry plenty of good accident insurance, take any chemical sales executive aside and ask him very seriously "And just what is your policy going to be on new business this fall?"

An irate reader button-holed us the other day and started—"I have a serious complaint to register." With sinking heart, we prepared to make all sorts of amends and he continued—"I set aside an hour each month to read CHEMICAL MARKETS and I find it so interesting that I never get done in the allotted period. Can't you do something about it?" We might easily, but we hope we won't.

The age of bronze vanished about the time of the Christian Era. The age of iron passed only half a century ago. The present age of steel will be short lived, for already we are beginning to live in an age of alloys. Platinum for durability, and magnesium for lightness, are important alloy ingredients. Each is expertly reviewed in articles this month.

It costs you nothing and there are no obligations if you are in the chemical business, to properly list your products in the Chemical Guide Book which will be published early this Fall. Questionnaires were mailed a month ago. If you have not returned yours, help yourself by doing so at once. Corrections and additions must all be made this month.

A figure that lends distinction to any chemical gathering, and a player who pretty consistently beats Colonel Bogey at golf, yet so retiring from the limelight of publicity that it is difficult to believe that for twenty years, Joseph Wrench has been sales manager of the Industrial Chemical Sales Company, Inc. He has a studious vein which has been directed to the uses made of all sorts of odd chemicals in curious places, and he has long been especially interested in the disposal of various chemical wastes and by-products. His paper on this subject is a maiden effort.

The past, the present, and particularly the future of the chemical distributor is apparently a subject always liable to vigorous debate. Our July editorial has brought us a stack of correspondence which ranges from congratulations upon our courage in dealing with the subject so frankly, to commendations for handling it so stupidly. Our correspondents seem to be pretty evenly divided as to whether the editorial was favorable to the producer or the distributor, from which we gather that we must have been reasonably successful in setting forth our impartial and mutually friendly attitude. Some of the most interesting of these letters, we are planning to publish in September.

And speaking of consolidations, as we were a couple of years ago, just wait till Du Pont merges itself.

No. 219 Sansome Street, Philadelphia, is about to be condemned to make way for a two blocks-square Custom House, and for the third time in forty years, the H. S. Vila Color Company will have to move to make way for a larger building. No. 219 is one of what is said to be the first row of connected brick houses built in Philadelphia. Originally a fashionable residential district on what was then called Lodge Street, it later became an actor's boarding house, later a saloon, and for the past half dozen years has been Joe Vila's headquarters—office, laboratory, and warehouse. Incidentally, the firm is almost as old as its building. Joe Vila's father, as many still remember in textile circles, was Higinio Saban Vila, who came from Barcelona, Spain, in 1879 equipped with working knowledge of the then—new aniline dyes. His father, Jose Vila, was a dyer before him, and Joe II has his grandfather's formula swatch book of recipes written in the year 1867.

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